Preface

Thank you for using the Mining Explosion-proof and Intrinsic Safety AC Inverter (hereinafter referred to as mining inverter) produced by FGI Science Technology Co., Ltd.

FGI mining inverter adopts vector control without speed sensor. Within the rated output speed range of the inverter, it can provide sufficient torque, so it is suitable for various loads

FGI mining inverter includes the following features: programmable control terminal, eight steps multi-step speed free setting, two analog outputs, two analog inputs, built-in PID controller, MODBUS communication function, multi motor driving automatic power balance.

The protection functions of FGI mining inverter include: hardware, software overcurrent protection, motor overload protection, output short circuit protection, DC bus overvoltage and under-voltage protection, three-phase input power failure (including overvoltage, under-voltage and phase loss protection), input and output phase loss protection, over temperature protection, etc.

FGI mining inverter is standard built in switching elements such as three-phase input fuse and isolation switch. The user does not need an additional switch, and controls the power on and power off of the mining inverter by operating the isolation switch.

FGI mining inverter does not contain input SPD (surge protection device), and users need to install it by themselves.

FGI mining inverter does not include input EMC filter. If necessary, customers need to install it by themselves. In order to reduce electromagnetic interference, the connecting cable between mining inverter and motor needs to use mining multi-core cable with shielding. In addition to 3-phase wiring and ground wire, there shall be no other wiring in multi-core cable. The wiring of the control terminal also needs to use shielded cable and stay away from the output cable as far as possible.

The operations listed in this manual are applicable to the 1140V / 660V voltage level of FGI mining inverter.

Before using this series of inverter, please read the operation manual carefully by the inverter users and relevant technicians, so as to ensure the correct installation and operation of this series of mining inverter and make the mining inverter give full play to its best performance.

As we are always committed to the continuous upgrading and improvement of products, the information provided by the company is subject to change without notice.

If you have problems in use, please contact our regional agents or directly contact our customer service center.

●Safety-related symbol descriptions

	Warning: May cause minor or moderate injury or damage to equipment due to misuse
	Danger: Occasions where death or serious injury may occur due to incorrect use

In some cases, even what is stated in the precautions can lead to a major accident.

Therefore, it is important to observe these important precautions in all cases.

●Confirmation when receiving the product

 **Warning**
1. Do not install damaged inverters or inverters with missing parts. There is a risk of injury.

●External installation

 **Warning**
2. Do not install damaged inverters or inverters with missing parts. There is a risk of injury.

●Wiring

 **Danger**
3. Make sure the input power is disconnected before wiring. There is a risk of electric shock and fire.
4. Ask electrical engineering professionals to perform wiring operations. There is a risk of electric shock and fire.
5. The grounding terminal must be reliably grounded (preferably separately). There is a risk of electric shock and fire.
6. Do not touch the input and output terminals directly, do not connect the input and output terminals of the inverter to the housing, and do not short-circuit between the input and output terminals. There is a risk of electric shock and short circuit.

●Internal installation

Warning

1. Make sure that the AC main circuit power supply is the same as the rated voltage of the inverter.

   There is a risk of injury and fire.

2. Do not perform voltage withstand tests on the inverter.

   It may cause damage to semiconductor components, etc.

3. Please connect and confirm according to the wiring diagram.

   There is a risk of electric shock and short circuit.

4. Please tighten the terminal with standard torque.

   There is a risk of fire.

5. Do not connect the input power cable to the output U, V and W terminals.

   Voltage applied to the output terminals will cause internal damage to the inverter.

6. Do not connect phase shift capacitors and LC/RC noise filters to the output circuit.

   This will cause internal damage to the inverter.

7. Do not connect the electromagnetic switch or electromagnetic contactor to the output circuit.

   When the inverter is running with load, the inrush current generated by the operation of the electromagnetic switch and electromagnetic contactor will cause the overcurrent protection circuit of the inverter to operate.

8. Do not disassemble the connection cables inside the inverter.

   It may lead to damage inside the inverter.

●Trial run

Danger

1. Confirm that the machine is installed before closing the input power, in the power on, please operate according to the regulations.

   There is a risk of electric shock.

2. If the power failure and restart is valid or the power-on command is valid, do not go near the machinery and equipment when parking, because the inverter will automatically restart when the call comes.

There is a risk of injury.

3. Please access the emergency stop switch and emergency stop in case of abnormal situation.

   There is a risk of injury.

●Run

Warning

1. Before operation, please check again the allowable range of use of the motor and the machine, etc.

   There is a risk of injury.

2. Do not check the signal during operation.

   It will damage the equipment.

3. Do not change the settings of the inverter at will. The series inverter is shipped with the proper settings.

   It will cause damage to the equipment.

●Maintenance, Inspection

Danger

1. Do not touch the terminals of the inverter, there is high voltage on the terminals.

   There is a risk of electric shock.

2. Before energizing, please make sure to deal with the exposed wires, and when disassembling, make sure to disconnect the power.

   There is a risk of electric shock.

3. Do not carry out maintenance or inspection work by non-technical personnel.

   There is a risk of electric shock and damage to the internal components.

Danger

1. CMOS integrated circuits are installed on the keyboard board, control circuit board and driver circuit board, so please pay special attention when using them.

2. Touch the board directly with your fingers, electrostatic induction may damage the

integrated chip on the board.

3. Do not change the wiring or remove the terminal wiring when power is on.

   Do not check the signal during operation as it may damage the device.

4. Do not change the name, type and parameters of the electrical components related to the intrinsically safe circuit during use and maintenance.

5. This product must not be connected to other equipment without joint inspection.

●Other

Danger

1. It is forbidden to modify the inverter by yourself.

   There is a risk of electric shock and injury.

2. The user assumes full responsibility for any damage caused by incorrect wiring or improper use or self-modification.

Content

Chapter 1 General Description

1.1 Nameplate

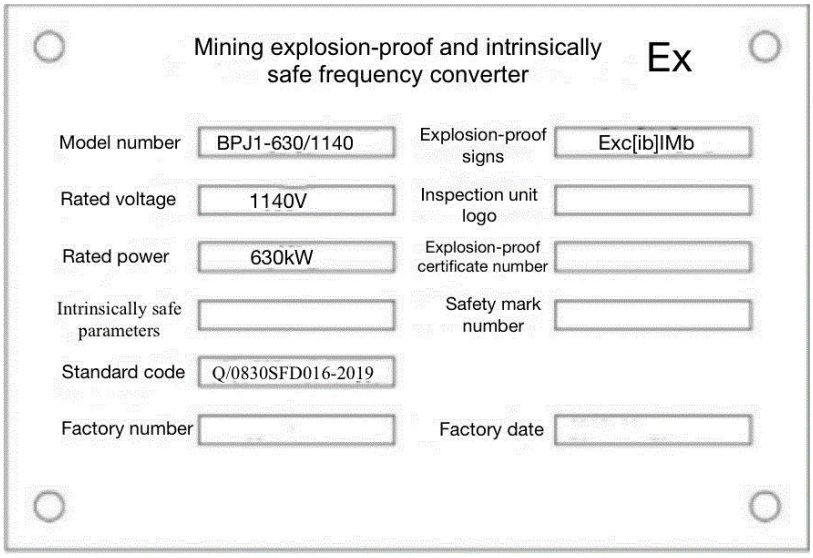


Figure 1-1 Mining inverter nameplate sample

1.2 Mining Inverter Series Models

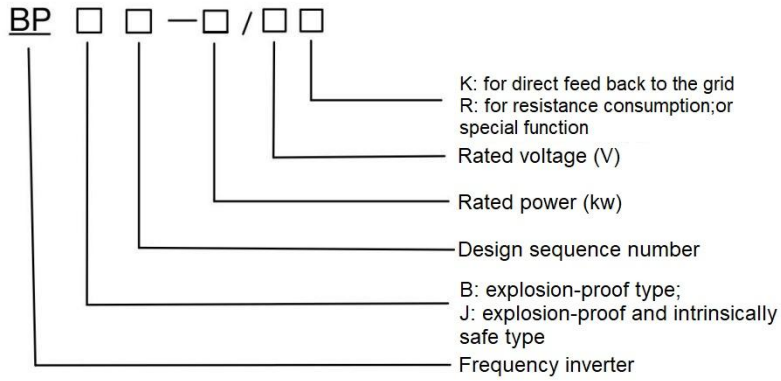


Figure 1-2 Mining inverter model description

BP-XX/ XX series mining inverter input voltage level is AC660V and AC1140V, 50Hz.

The power range of 660V inverter is :132kW-250kW.

The power range of 1140V inverter is :45kW-630kW.

The equipment conforms to GB3836-2021

Q/SDYF-630-12-2019

MT/T1099-2009 "Mining frequency conversion speed control device"

1.3 Product Type

Explosion-proof type: mining explosion-proof and intrinsically safe, explosion-proof mark is: "Exd[ib]IMb"

1.4 Intrinsically Safe Parameters

Table 1-1 Intrinsically safe parameters of mine inverter

Model	Intrinsically safe parameters	Note
BPJ1-132/660K BPJ1-200/660K BPJ1-250/660K	One intrinsically safe 24V output power source: Uo:DC24.3V,Io:0.5A,Co:2.2μF,Lo:0.5mH; One LW8-SI-EX-P11 analog input isolated safety gate (2,3): Uo:DC5.5V,Io:60mA,Co:40μF,Lo:7mH,Po:0.09W Uo:DC5.5V,Io:60mA,Co:40μF,Lo:7mH,Po:0.09W	One MKD-I output intrinsically safe power module, explosion-proof certificate number: 320190686U, manufacturer: Wuxi Coal Electric Co. One LW8-SI-EX-P11 analog input isolated safety grille, with coal-proof certificate number: CNEx18.4849, manufactured by Chongqing Longway Instrument Co.
BPJ2-400(315) /1140K、BPJ1-250(200、160、132、110、90、75) /1140K BPJ1-400(315、250、200、160、132、110、90、75)/1140	Keyboard internal power supply, no external load Ui: DC5.4V,Ii:546mA, operating voltage: DC5.0V, operating current ≤ 20mA. One LW8-SI-EX-P11 analog input isolated security gate (1, 3): Uo: DC28V,Io:90mA, Co: 0.05μF, Lo:2.4mH, Po:0.63W	Built-in an analog input isolated safety grid Manufacturer: Chongqing Longway Instrument Co.Explosion-proof certificate number: CNEx18.4849; a KHExKmII explosion-proof keyboard and mouse, explosion-proof certificate number: CNEx18.0178, manufacturer: Shenzhen Kehang Technology Development Co.
BPJ2-630/1140、 BPJ1-500/1140	One intrinsically safe 24V output power source: Uo: DC24.3V, Io: 0.5A, Co: 2.2μF, Lo: 0.5mH. One LW8-SI-EX-P11 analog	A MKD-I output intrinsically safe power supply module, explosion-proof certificate No. 320190686U, manufacturer: Wuxi Coal Electric Co. One

	input isolated safety barrier (2, 3). Uo:DC5.5V,Io:60mA,Co:40μF,Lo:7mH,Po:0.09W	LW8-SI-EX-P11 analog input isolated safety grille, Ex certificate No. CNEx18.4849, manufactured by Chongqing Longway Instrument Co.

The disconnecting switch breaking capacity test meets the following table

Table 1-2 Isolation breaking capacity

Ic / Ie	U/ Ue	Cosφ±0.05	Number of tests	Interval time s
1[a]	1.0	0.35	3[c]	180
6[b]	1.05			

[a] Suitable for air type disconnect switches or isolated phase change switches with rated operating voltage 1140V and below

[b] For vacuum type disconnect switches or isolated phase change switches with rated operating voltage 1140V and below

[c] For phase change switches according to each one for one time

Chapter 2 Installation of Mining Inverter

Warning

When handling, please drag the base of the body.

2.1 Product Confirmation

Warning

Do not install damaged inverters or inverters with missing parts.

There is a risk of injury.

Our products are carefully inspected before delivery, but due to transportation or unexpected circumstances, it is important to check the products carefully after purchase.

When you receive the product, please check the items in Table 2-1.

Table 2-1 Inspection items

Confirm items	Confirmation method
Whether or not it is the same as the ordered item	Please confirm the nameplate on the inverter cabinet door
Whether there are damaged parts or damaged areas	Check the overall appearance and check whether it is damaged during transportation
Instruction manual, certificate of conformity and other accessories	Operate instructions and corresponding accessories

If there is any abnormality, please contact your local dealer to solve it or contact our sales department directly.

2.2 Installation Environment of Mining Inverter

(1) Installed in underground coal mine, the ambient temperature should be within the range of 0ºC-40ºC. If the temperature exceeds 40ºC, external forced heat dissipation or derating is required.

(2) Avoid installation in places with dust, floating fibers and metal powder.

(3) Do not install in places where corrosive gases are present.

(4) Humidity requirement is less than 95%RH(+25℃), no condensation of water droplets.

(5) Use in a place without significant vibration and shock.

(6) Keep away from electromagnetic interference sources and other electronic equipment sensitive to electromagnetic interference as far as possible.

(7) The frequency converter may encounter the mechanical resonance point of the load device at some output frequencies, which can be avoided by setting the jump frequency parameter in the frequency converter.

Chapter 3 Wiring of Mining Inverter

Danger
1. Before wiring, please make sure the input power is disconnected. There is a risk of electric shock and fire.
2. Have electrical engineering professionals perform the wiring work. There is a risk of electric shock and fire.
3. Make sure the grounding terminal is reliably grounded (preferably separately). There is a risk of electric shock and fire.
4. After the emergency stop terminal is turned on, be sure to check whether its operation is effective. There is a risk of injury. (The responsibility of wiring is borne by the user)
5. Do not touch the output terminals directly, do not connect the output terminals of the inverter to the housing, and do not short-circuit between the output terminals. There is a risk of electric shock and causing a short circuit.

Warning
1. Make sure that the AC main circuit power supply is the same as the rated voltage of the inverter. There is a risk of injury and fire.
2. Do not perform voltage withstand test on the inverter. It may cause damage to semiconductor components, etc.
3. Do not connect the input power cable to the output U, V and W terminals. Voltage applied to the output terminals may cause internal damage to the inverter.
4. Do not disassemble the connection cables inside the inverter. It may cause internal damage to the inverter.

3.1 Main Circuit Terminal Wiring

3.1.1 Terminal Wiring Description

1) Arrangement diagram of main circuit terminals

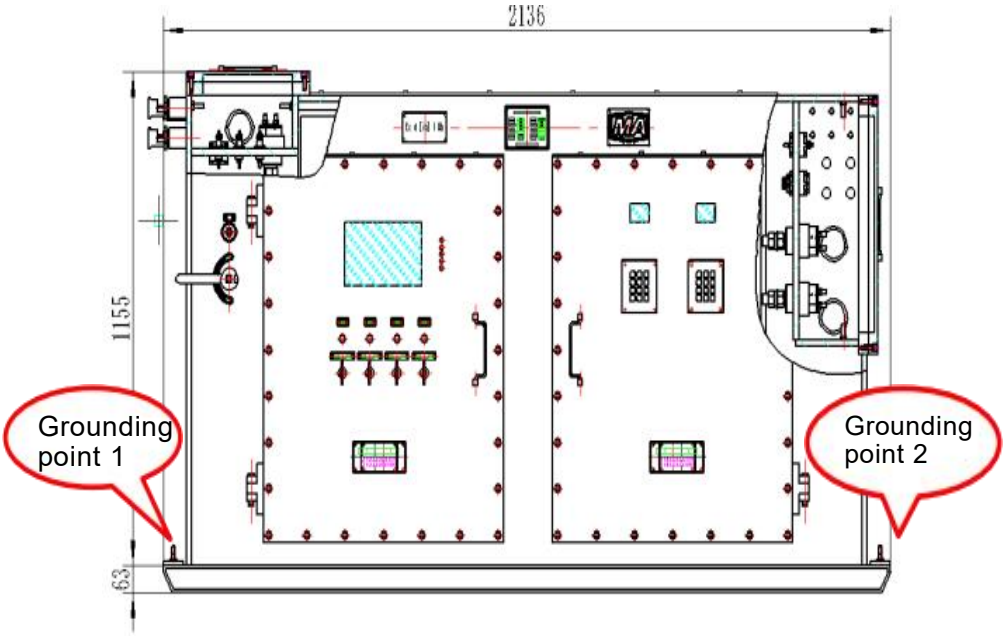


Figure 3-1 Front view of 660V (132kW-250kW) series four-quadrant air-cooled inverter

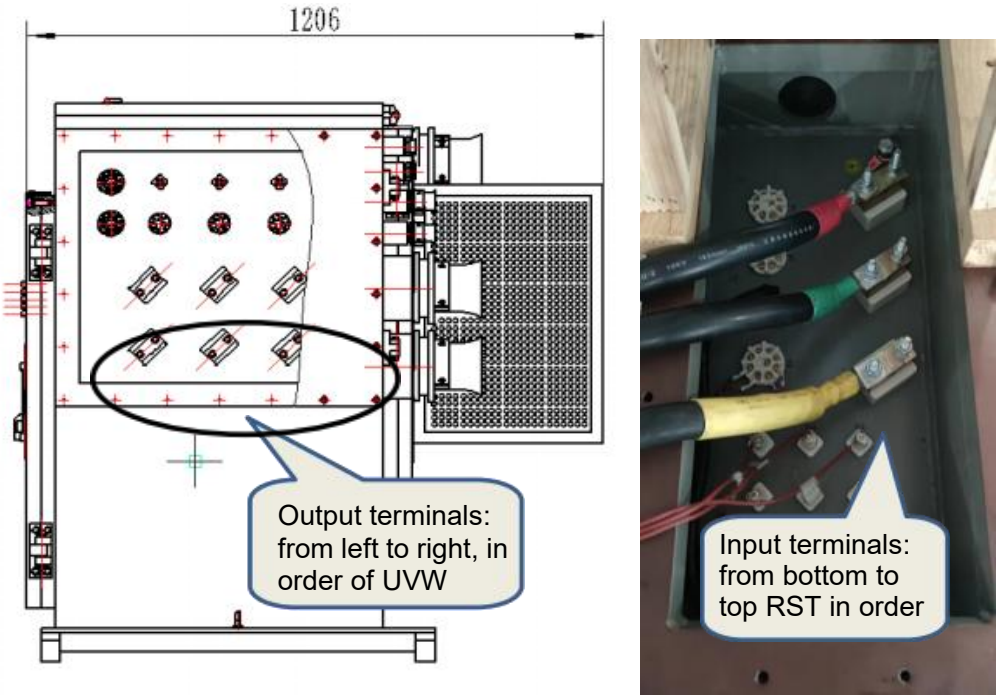


Figure 3-2 660V (132kW-250kW) series four-quadrant air-cooled inverter complete wiring cavity schematic

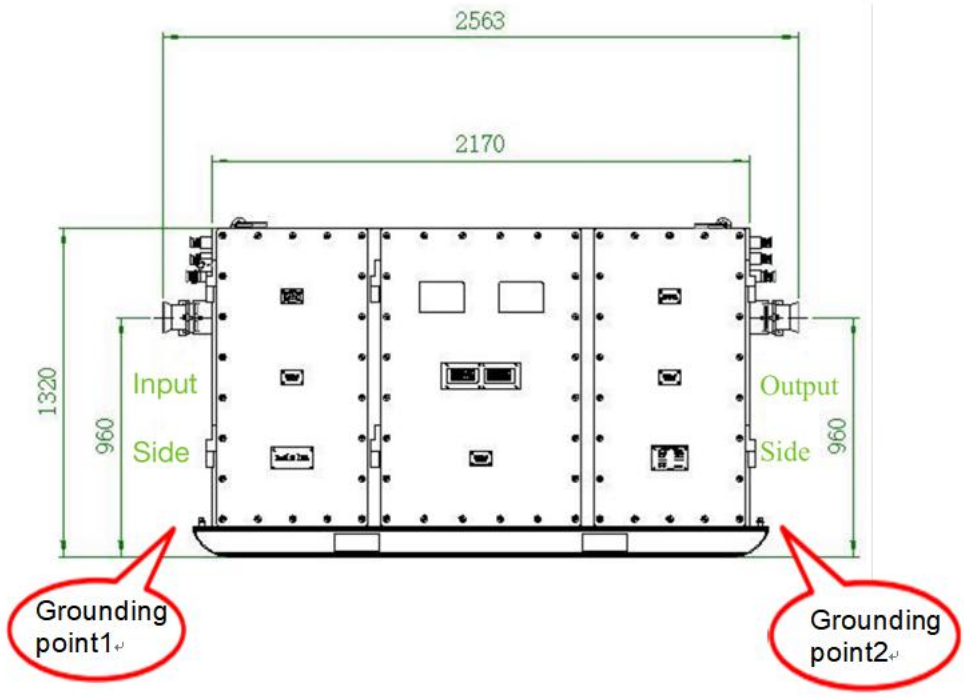


Figure 3-3 Front view of 1140V (315kW-630kW) air-cooled two-quadrant inverter

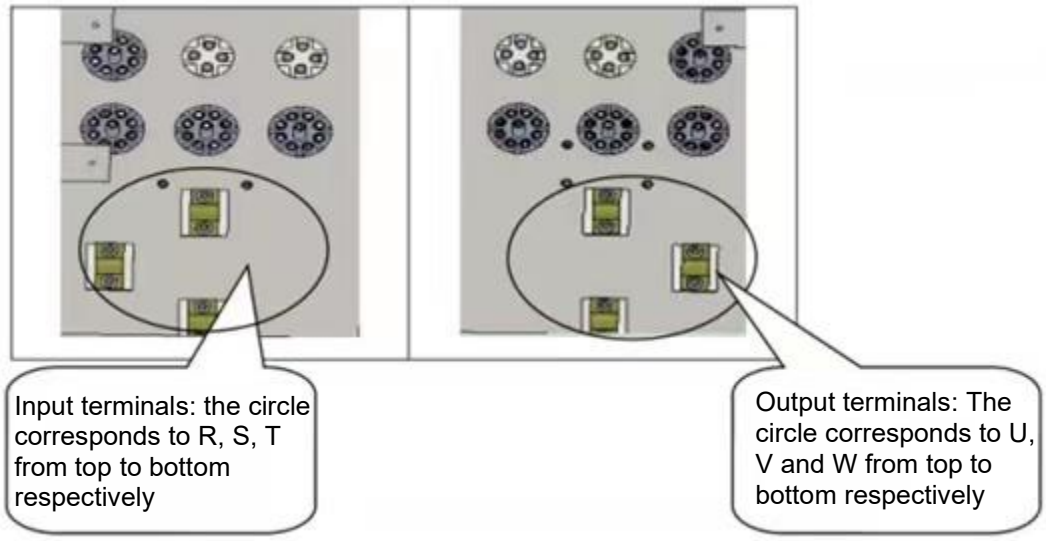


Figure 3-4 1140V (315kW-630kW) air-cooled two-quadrant inverter wiring cavity schematic

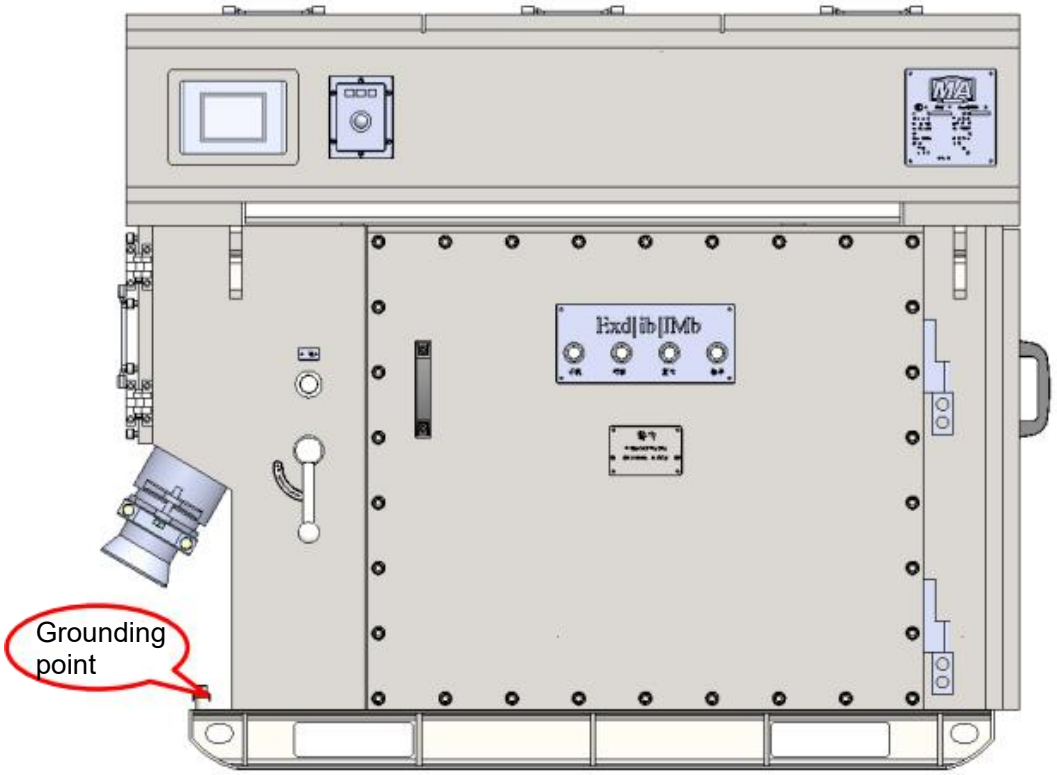


Figure 3-5 Front view of 1140V (75kW-400kW) water-cooled two / four quadrant inverter

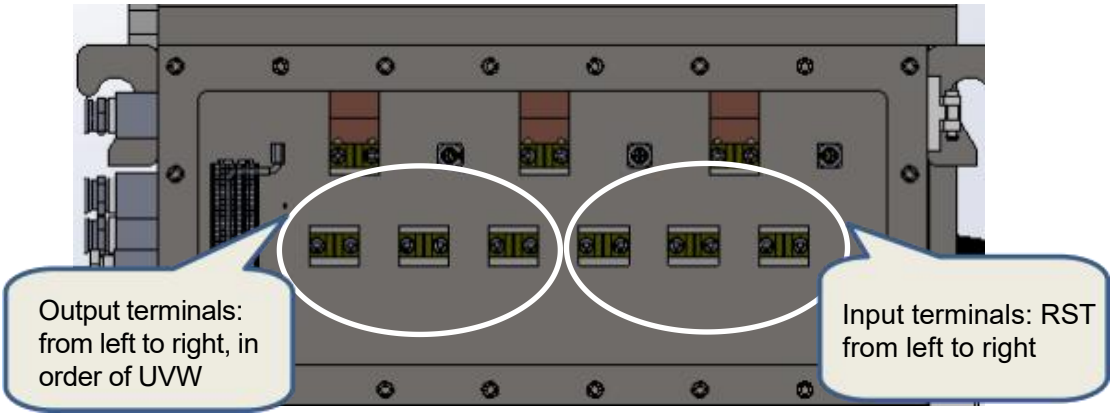


Figure 3-6 1140V (75kW-400kW) water-cooled two / four quadrant inverter wiring cavity schematic

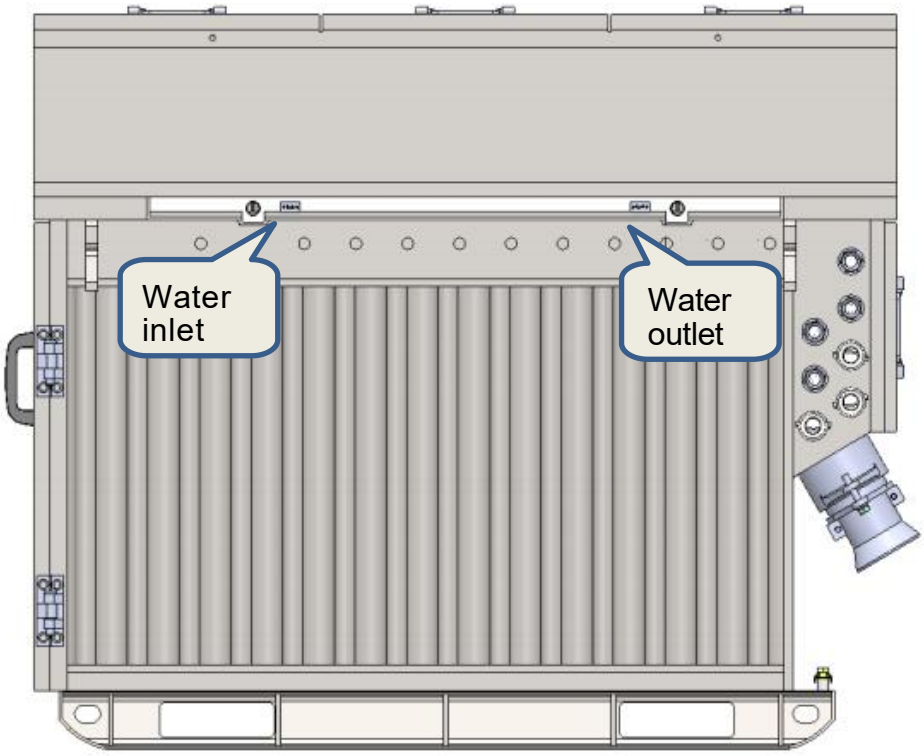


Figure 3-7 1140V (75kW-400kW) water-cooled two / four quadrant inverter back of the whole machine schematic

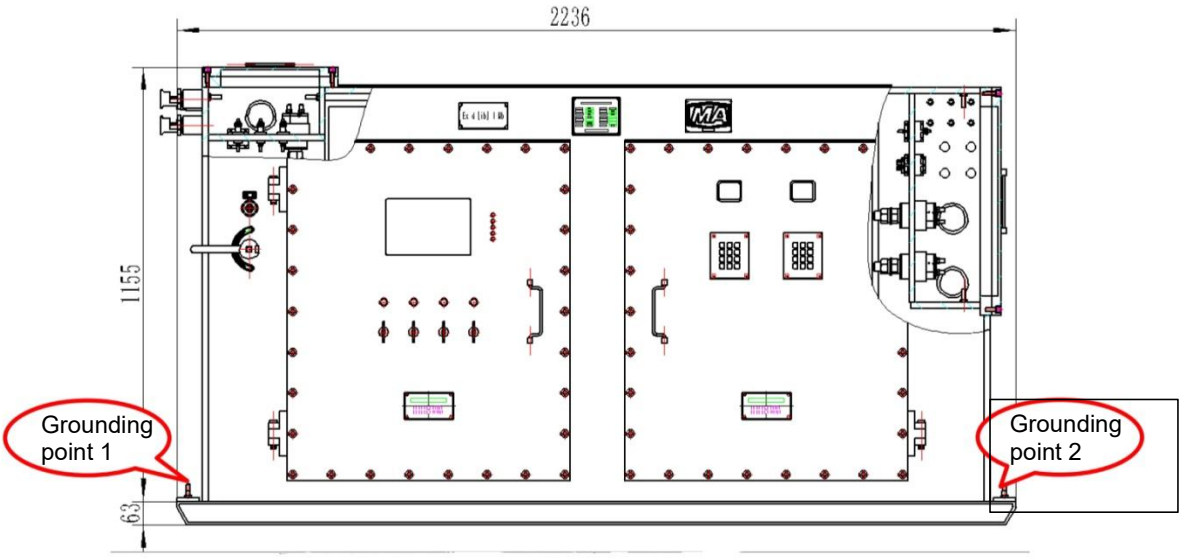


Figure 3-8 Front view of 1140V (315kW-630kW) water-cooled two-quadrant inverter

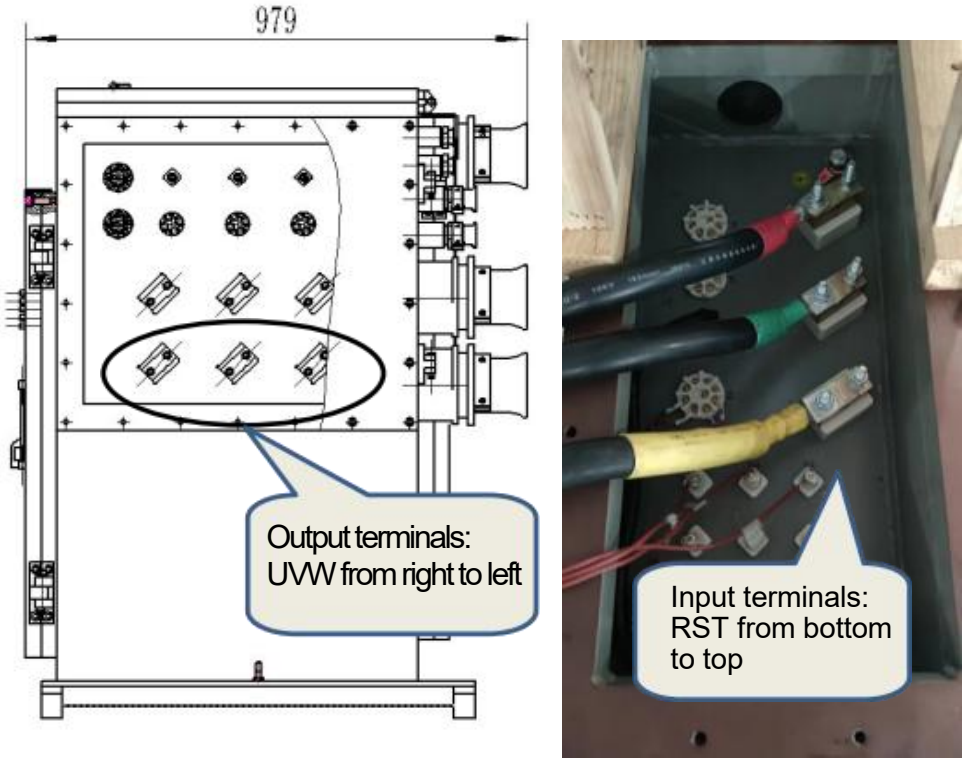


Figure 3-9 1140V (315kW-630kW) water-cooled two-quadrant inverter complete wiring cavity schematic

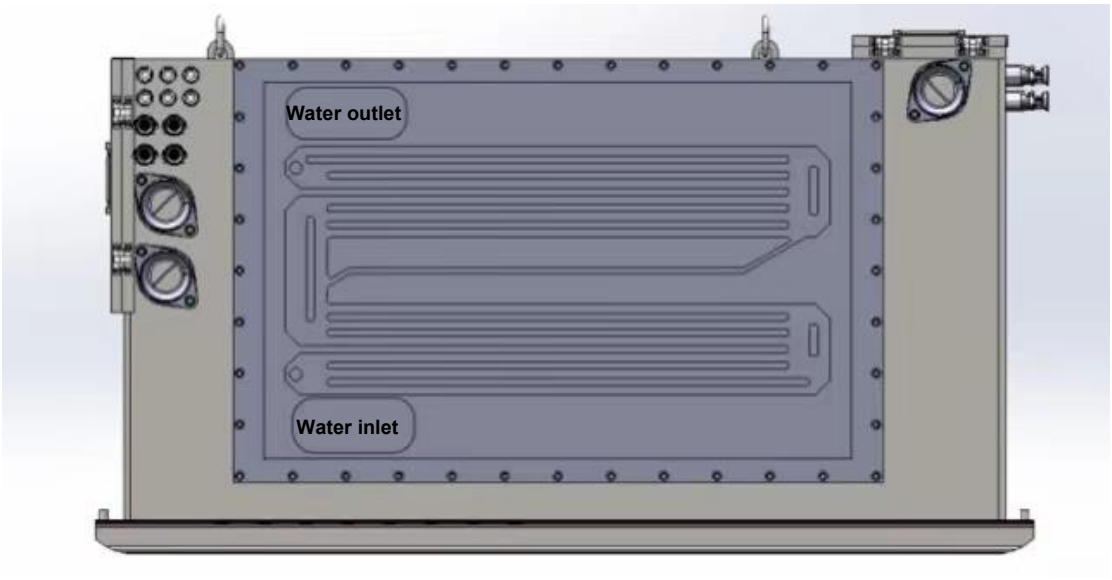


Figure 3-10 Back view of 1140V (315kW-630kW) water-cooled two-quadrant inverter

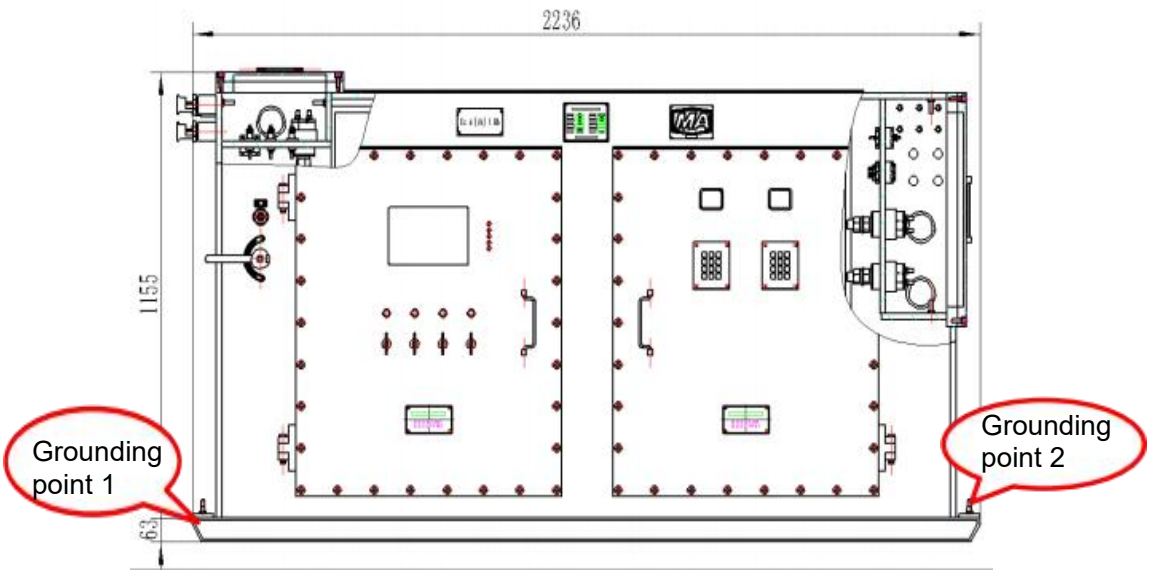


Figure 3-11 Front view of 1140V (315kW-630kW) water-cooled four-quadrant inverter cabinet

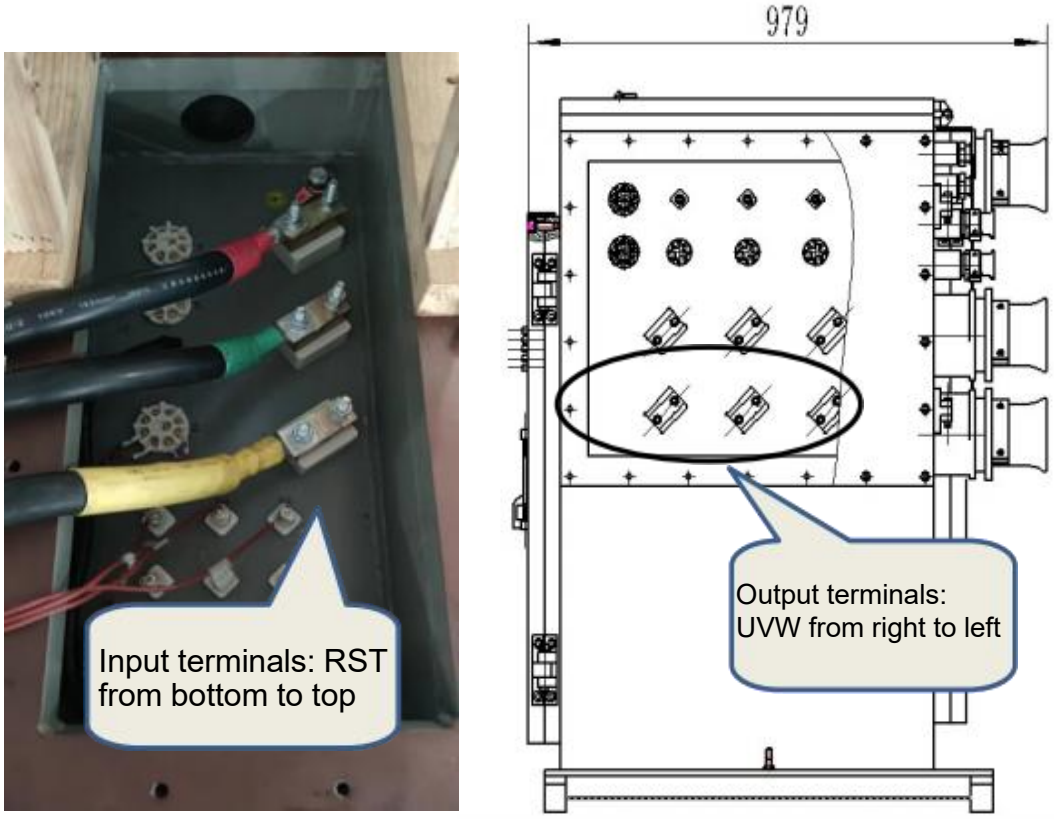


Figure 3-12 1140V (315kW-630kW) water-cooled four-quadrant inverter wiring cavity schematic

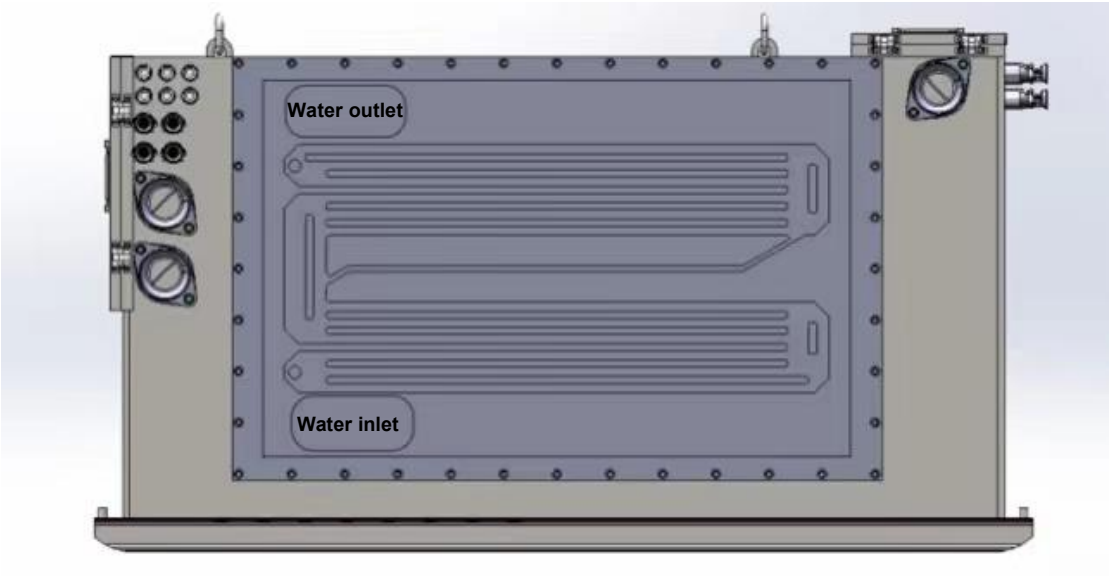


Figure 3-13 Back view of 1140V (315kW-630kW) water-cooled four-quadrant inverter

As shown in Figure 3-14, taking the nameplate side of the filter reactor cabinet as the front side and looking at the front side, the left wiring cavity is the power input, and the three-phase power lines are connected to the R, S and T terminals of the left wiring cavity respectively; the three-phase power output R, S and T of the right wiring cavity is connected to the three-phase input R, S and T of the inverter cabinet.

Before commissioning and operation, the filter reactor cabinet also needs to be reliably grounded. There are two ground connections on the left and right sides of the bottom of the housing, and the cable diameter is not less than 35mm².

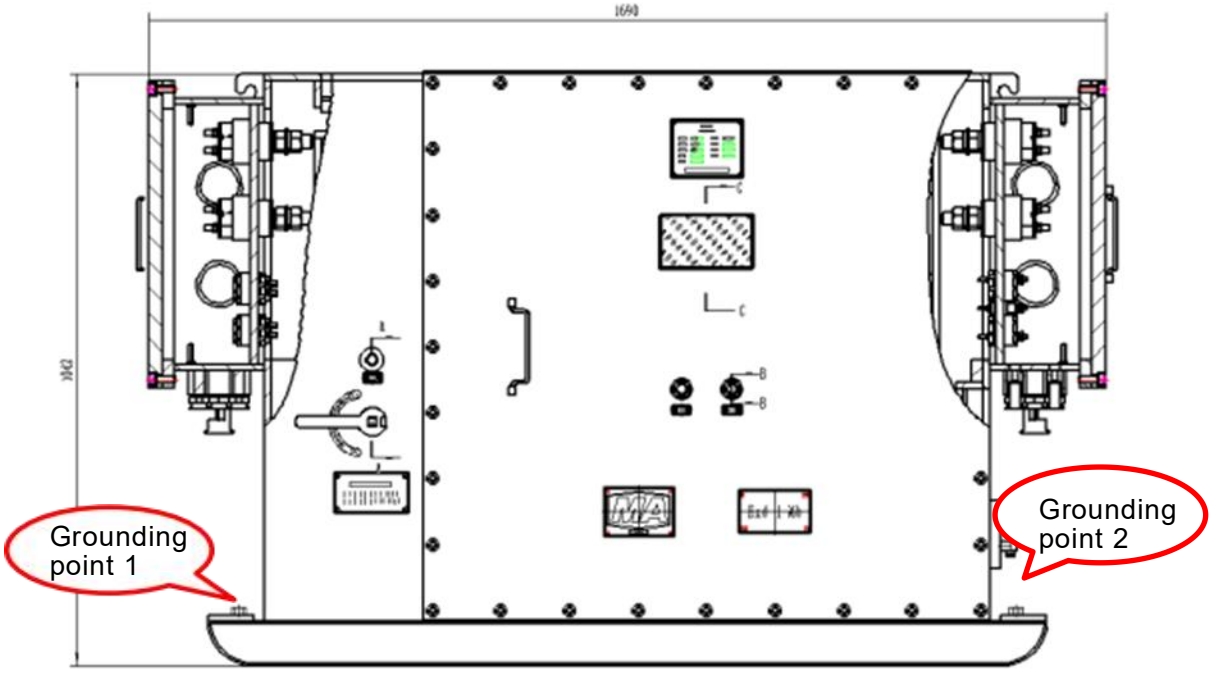


Figure 3-14 Front view of filter reactor cabinet

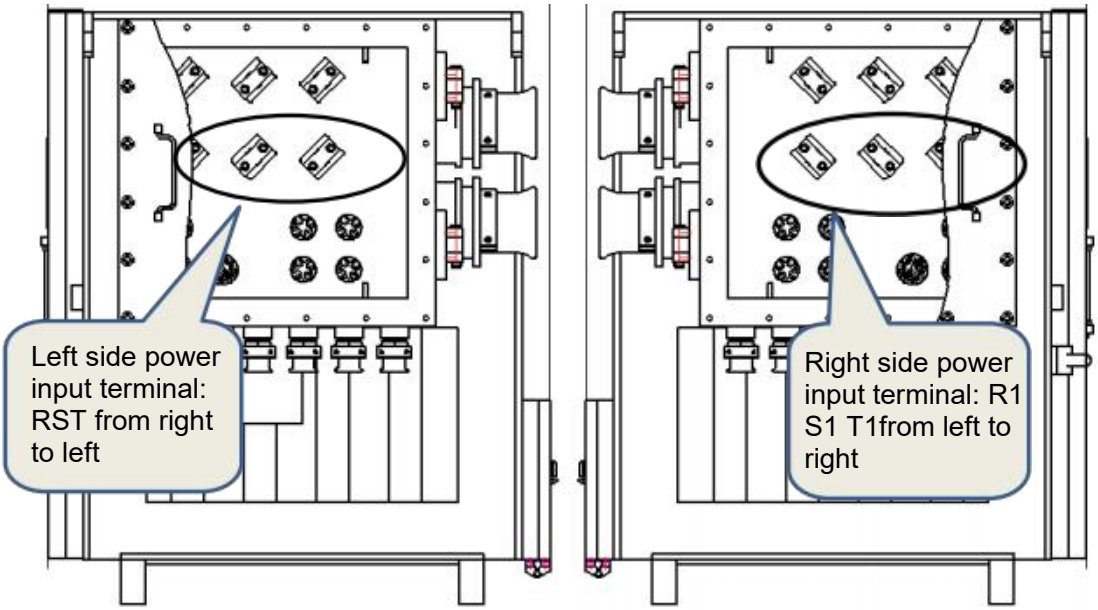


Figure 3-15 Filter reactor cabinet wiring cavity schematic

2) Terminal description

Table 3-1 Terminal Description

Terminal Name	Function Description
R、S、T	Three-phase AC power input terminal
U、V、W	Three-phase AC power output terminal

3) Wiring considerations

1) Inverter input side (AC power) R, S, T

a) The input side wiring of the inverter has no phase sequence requirement.

b) The specification and installation method of external power wiring should comply with local regulations and relevant IEC standards.

c) For power cable wiring, please select copper conductor of corresponding size according to the value in the recommended table.

2) Inverter output side (AC power) U, V, W

a) The specification and installation method of external power wiring should comply with local regulations and relevant IEC standards.

b) The output side of the inverter should not be connected with capacitors or surge absorbers, otherwise it will cause frequent protection or even damage to the inverter.

3) The motor cable is not easy to be too long, otherwise, due to the influence of distributed capacitance, it is easy to produce electrical resonance, which will cause the motor

insulation damage or generate large leakage current to make the inverter overcurrent protection.

4) Grounding terminal PE

a) The terminal must be grounded reliably, and the resistance value of the ground wire must be less than 0.1Ω, otherwise it will lead to abnormal work of the equipment or even damage.

b) Do not share the ground terminal with the N terminal of the power zero line.

c) The size of the protective grounding conductor is selected according to the following table.

Table 3-2 Dimensions of grounding conductors

The cross-sectional area of a phase line (S)	Minimum cross-sectional area of protective conductors (Sp)
S ≤ 16mm²	S
16mm² ＜ S ≤ 35mm²	16mm²
35mm² ＜ S	S/2

5) Requirements for front-end protection devices:

a) Suitable protection devices should be installed on the input distribution line, which should provide over-current protection, short-circuit protection and isolation protection.

b) The selection of protection devices should take into account the power cable current capacity, the system overload capacity requirements and the short-circuit capacity of the equipment pre-stage distribution.

3.2 Control Circuit Terminals and Description

3.2.1 External Control Terminal Function

The external control terminals (referred to as external terminals) mainly accomplish the following functions.

1. Forward and reverse rotation operation control

2. Stop and reset control.

3. Terminal control;

4. Multi-step speed control.

5. Fault transmission and analog input and output.

6. Forced stop operation in case of emergency.

Through both the external control terminal and the display panel, the user can perform forward/reverse operation, stopping, fault reset and speed setting of the inverter. The switching between the two is determined by the parameter settings.

The remote communication control can perform all functions of the keypad control and the terminal control.

3.2.2 Terminal Distribution of the Four-Quadrant Air-Cooled Inverter of the 660V (132kW-250kW) series

The external terminal distribution of the 660V (132kW-250kW) series four-quadrant air-cooled inverter is shown in Figure 3-16.

Terminals Block XT1					
Address				No. head	Address
External locking			1	DI15	X3-B:1
External fault			2	DI16	X3-B:2
Spare			3	DI17	X3-B:3
Reset			4	DI22	X3-B:4
Forward			5	DI23	X3-B:5
Reverse			6	DI24	X3-B:6
Emergency stop			7	DI25	X3-B:7
Multi-speed 1			8	DI26	X3-B:8
Multi-speed 2			9	DI27	X3-B:9
Spare			10	DI30	X3-B:10
Public side			11	24V3+	X3-B:11
			12		
			13		
Run			14	K0	X3-B:14
			15	D0	X3-B:15
Fault			16	K1	X3-B:16
			17	D1	X3-B:17
Spare			18	K2	X3-B:18
			19	D2	X3-B:19
Spare			20	K3	X3-B:20
			21	D3	X3-B:21
Analog output 1			22	AO1	X3-B:22
Analog output 2			23	AO2	X3-B:23
Analog output 3			24	AO3	X3-B:24
Analog output 4			25	AO4	X3-B:25
			26	GND13	X3-B:26
			27		
Analog input 3			28	AI2	X3-B:28
Analog input 4			29	AI3	X3-B:29
			30	GND14	X3-B:30
			31		
485 communication			32	485A1 Red	X4-B:2
			33	485B1 Black	X4-B:3
CAN communication			34	CANL Red	X4-B:4
			35	CANH Black	X4-B:5

Figure 3-16 External terminal distribution of 660V (132kW-250kW) series four-quadrant air-cooled inverter

1) Digital input and power supply terminals

The digital input and power supply group contains 12 terminals, DI15-DI17, DI22-DI27, a total of 9 digital input terminals, and 24V power supply common terminal. When the corresponding terminal is connected to the 24V terminal, it is defined as high level and the digital quantity is 1; when it is open, it is defined as low level and the digital quantity is 0.

The DI15 and DI16 terminals are the blocking and fault signals from the external site respectively, and are connected to the IO board of the inverter.

Any of the DI22-DI27 terminals can be set by the display panel to give one of the functions listed in Table 3-3.

Table 3-3 Functions of DI1-DI6 Terminals

Function	Description	Default parameters
Reset DI22	If the system detects a change from low to high at the corresponding control terminal, this function is valid and the inverter will try to reset the system fault. If the system fault source is removed, the system will reset the existing fault information. If the system still has the corresponding fault message will continue to be displayed.	P5-00 is set to 9 (emergency stop)
Forward DI23	When the corresponding control terminal is high, the function is active and the motor runs in the forward direction. When the corresponding terminal is low, the motor will stop running (without self-locking).	P5-01 is set to 1 (forward rotation)
Reverse DI24	When the corresponding control terminal is high, the function is valid and the motor runs in reverse. When the corresponding terminal is low, the motor will stop running (without self-locking).	P5-02 set to 2 (reverse)
Emergency stop DI25	When the corresponding control terminal is high level, the function is effective and the inverter is executed to stop immediately; when the terminal is low level, no treatment is done to the inverter. If an accident occurs on the inverter site, the inverter needs to be stopped in an emergency. If an accident occurs in the inverter site equipment, the emergency stop operation of the inverter is required.	P5-03 set to 47 (emergency stop)
Multi-speed 1 DI26	The 4 states of the 2 terminals enable the setting of 4 speed segments or 4	P5-04 is set to 12 (multi-speed 1)

Multi-speed 2 DI27	other commands.	P5-05 is set to 13 (multi-speed 2)

2) Digital output terminals

There are four groups of digital outputs, which are normally open point operation signals K0 and D0, normally open point fault signals K1 and D1, and two groups of backup signals.

3) Analog output terminals

There are 4 analog output terminals for 2 groups of analog outputs. The inverter can output two analog signals AO1 and A02, and the user can choose to output 0-10V voltage signal or 0-20mA/4-20mA current signal by changing the parameters. (AO3 and AO4 are not defined in the program)

4) Analog input terminals

There are 5 analog input terminals for 2 sets of analog inputs. Analog input 2 corresponds to the second analog input AI2, and analog input 3 corresponds to the third analog input AI3, which is not defined in the program.

In addition, the external X1 terminal block (see Figure 3-17) leads to a separate analog input terminal, and the inverter speed setting (4-20mA) corresponds to the first analog input AI1, which is connected to the main control after intrinsically safe isolation.

The user can change the parameters to determine the analog input corresponding to the frequency channel setting mode.

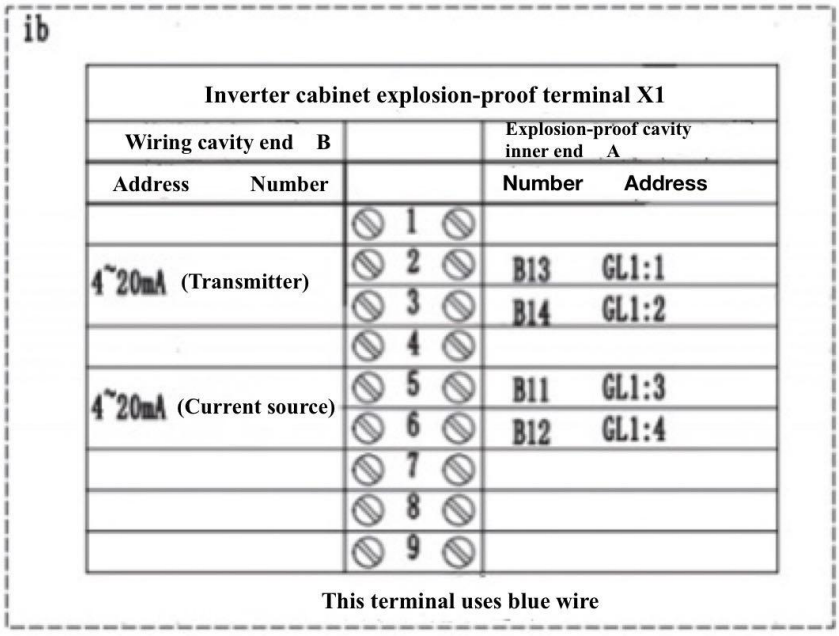


Figure 3-17 Inverter external terminal block X1

5) Communication terminals

There are four communication terminals, one 485 communication terminal for communication with the site host computer and one CAN communication terminal for parallel communication.

3.2.3 1140V (315kW-630kW) Air-cooled Two-quadrant Inverter Terminal Distribution

The external terminal distribution of the 1140V (315kW-630kW) air-cooled two-quadrant inverter is shown in Figure 3-18

Terminal Block XT3						
Address				No. Head		Address
Reset			1	DI1		XT22-B:1
Forward			2	DI2		XT22-B:2
Reverse			3	DI3		XT22-B:3
Emergency stop			4	DI4		XT22-B:4
Terminal			5	DI5		XT22-B:5
Multi-speed			6	DI6		XT22-B:6
			7	COM		XT21-B:7
Public side		○	8	5V		XT21-B:9
		○	9			
			10	B1		XT23-B:3
Operation			11	K1		XT20-B:6
			12	D1		XT20-B:7
Fault			13	B2		XT20-B:8
			14	D2		XT20-B:9
			15	K2		XT23-B:2
Analog output 1			16	AO1+	Blue	XT21-B:1
			17	GND13	Black	XT21-B:2
Analog output 2			18	AO2+	Blue	XT21-B:3
			19	GND14	Black	XT21-B:4
Analog input 1			20	AI1+	Blue	XT21-B:5
			21	GND11	Black	XT21-B:6
Analog input 2			22	AI2+	Blue	XT21-B:8
			23	GND12	Black	XT21-B:9
485 communication			24	485A2	Red	XT20-B:2
			25	485B2	Black	XT20-B:3
CAN communication			26	CANL	Red	XT20-B:4
			27	CANH	Black	XT20-B:5
			28			

Figure 3-18 External terminal distribution of 1140V (315kW-630kW) air-cooled two-quadrant inverter

1) Digital input and power terminals

The digital input and power group consists of 9 terminals, DI1-DI6, 6 digital input terminals, 5V power common terminal and COM, which are defined as high level and 1 when the corresponding terminal is connected to 5V terminal, and low level and 0 when it is open or connected to COM terminal.

Any of the DI1-DI6 terminals can be set by the display panel to give one of the functions listed in Table 3-4.

Table 3-4 Functions of DI1-DI6 Terminals

Function	Description	Default parameters
Reset DI1	When the system detects a change from low to high level in the corresponding control terminal, this function is valid and the inverter will try to reset the system fault. If the system fault source has been eliminated, the system will reset the existing fault information. If the system fault is still present, the corresponding fault message will continue to be displayed.	P5-00 set to 9 (emergency stop)
Forward DI2	When the corresponding control terminal is high, the function is valid and the motor runs in positive direction. When the corresponding terminal is low, the motor will stop running (without self-locking).	P5-01 Set to 1 (forward rotation)
Reverse DI3	When the corresponding control terminal is high, the function is valid and the motor runs in reverse. When the corresponding terminal is low, the motor will stop running (without self-locking).	P5-02 set to 2 (reverse rotation)
Emergency stop DI4	When the corresponding control terminal is high level, the function is valid and the inverter will be stopped immediately; when the terminal is low level, no treatment will be done to the inverter. If an accident happens to the inverter site equipment, the inverter needs to be stopped in emergency If an accident occurs in the inverter site equipment, the inverter needs to be operated as an emergency stop.	P5-03 set to 47 (emergency stop)
Multi-speed 1 DI5	The 4 states of the 2 terminals can be used to set 4 speed segments or 4 other commands.	P5-04 set to 12 (multi-speed 1)
Multi-speed 2 DI6		P5-05 set to 13 (multi-speed 2)

2) Digital output terminals

There are two sets of digital outputs: the normally open operating signals K1 and D1, and the normally closed fault signals B2 and D2, of which K2 is the normally open point of the relay corresponding to the fault, which can be used or not according to the site conditions.

3) Analog output terminals

There are 4 analog output terminals for 2 groups of analog output. The inverter can output two analog signals AO1 and A02, and the user can choose to output 0-10V voltage signal or 0-20mA/4-20mA current signal by changing the parameters.

4) Analog input terminals

There are 4 analog input terminals, which are used for 2 sets of analog inputs. The 4-20mA corresponds to the first analog input AI1, which is connected to the main control after the intrinsic safety isolation; the analog input 2 corresponds to the second analog input AI2, which is kept as a backup. The user can change the parameters to determine the frequency channel of the analog inputs.

5) Communication terminals

There are four communication terminals: one 485 communication terminal for communication with the site host computer and one CAN communication terminal for parallel communication.

3.2.4 1140V (75kW-400kW) Water-cooled Two/ Four quadrant Inverter Terminal Distribution

The external terminal distribution of the 1140V (75kW-400kW) water-cooled two/quadrant inverter is shown in Figure 3-19.

Terminal Block XT1					
Address				No. head	Address
External locking			1	DI15	X3-B:1
External fault			2	DI16	X3-B:2
Spare			3	DI17	X3-B:3
Reset			4	DI22	X3-B:4
Forward			5	DI23	X3-B:5
Reverse			6	DI24	X3-B:6
Emergency stop			7	DI25	X3-B:7
Multi-speed 1			8	DI26	X3-B:8
Multi-speed 2			9	DI27	X3-B:9
Spare			10	DI30	X3-B:10
Public side 24V		○	11	24V2+	X3-B:11
		○	12		
		○	13		
Operation			14	K0	X3-B:12
			15	D0	X3-B:13
Fault			16	K1	X3-B:14
			17	D1	X3-B:15
Spare			18	K2	X3-B:16
			19	D2	X3-B:17
Analog output 1			20	A01	X3-B:18
Analog output 2			21	A02	X3-B:19
Analog output 3			22	A03	X3-B:20
Analog output 4			23	A04	X3-B:21
Public Endlands		○	24	GND13	X3-B:22
		○	25		
		○	26		
Analog input 2			27	A12	X3-B:23
Analog input 3			28	A13	X3-B:24
Analog input 4			29	A14	X3-B:25
Public Endlands		○	30	GND12	X3-B:26
		○	31		
		○	32		
485 communication			33	485A1	X3-B:27
			34	485B1	X3-B:28
CAN communication			35	CANL	X3-B:29
			36	CANH	X3-B:30

Figure 3-19 1140V (75kW-400kW) water-cooled two / four quadrant inverter external terminal distribution

1) Digital input and power supply terminals

The digital input and power supply group contains 13 terminals, DI15-DI17, DI22-DI27, a total of 9 digital input terminals, and 24V power supply common terminal. When the corresponding terminal is connected to the 24V terminal, it is defined as high level and the digital quantity is 1; when it is open, it is defined as low level and the digital quantity is 0.

The DI15 and DI16 terminals are the blocking and fault signals from the external site respectively, and are connected to the IO board of the inverter.

Any of the DI22-DI27 terminals can be set by the display panel to give one of the functions listed in Table 3-5.

Table 3-5 Functions of DI1-DI6 Terminals

Function	Description	Default parameters
Reset DI22	When the system detects a change from low to high level in the corresponding control terminal, this function is valid and the inverter will try to reset the system fault. If the system fault source is eliminated, the system will reset the existing fault information. If there is still a system fault, the corresponding fault message will continue to be displayed.	P5-00 set to 9 (emergency stop)
Forward DI23	When the corresponding control terminal is high, the function is valid and the motor will run forward: when the terminal is low, the motor will stop running (without self-locking).	P5-01 Set to 1 (forward rotation)
Reverse DI24	When the corresponding control terminal is high, the function is valid and the motor runs in reverse; when the terminal is low, the motor will stop running (without self-locking).	P5-02 set to 2 (reverse)
Emergency stop DI25	When the corresponding control terminal is high level, the function is valid and the inverter will be executed to stop immediately; when the terminal is low level, no treatment will be done to the inverter. If an accident occurs in the inverter field equipment, the inverter needs to be operated for emergency stop.	P5-03 set to 47 (emergency stop)
Multi-speed 1 DI26	The four states of the two terminals enable the setting of four speed segments or four other commands.	P5-04 set to 12 (multi-speed 1)
Multi-speed 2 DI27		P5-05 set to 13 (multi-speed 2)

2) Digital output terminals

There are three groups of digital outputs, which are normally open point operation signals K0 and D0, normally open point fault signals K1 and D1, and one spare group.

3) Analog output terminals

There are 4 analog output terminals for 2 groups of analog outputs. The inverter can output two analog signals AO1 and A02, and the user can choose to output 0-10V voltage signal or 0-20mA/4-20mA current signal by changing the parameters. (AO3 and AO4 are not defined in the program)

4) Analog input terminals

There are 5 analog input terminals, which are used for 2 sets of analog inputs. Analog input 2 corresponds to the second analog input AI2, analog input 3 corresponds to the third analog input AI3, and analog input 4 is not defined in the program.

In addition, the External X1 terminal block (see Figure 3-20) has a separate analog input terminal, and the inverter speed setting (4-20mA) corresponds to the first analog input AI1, which is connected to the main control after intrinsically safe isolation.

The user can change the parameters to determine the frequency channel of the analog input.

Terminal Block XT0					
Address				No.head	Address
4~20mA(Transmitter)			1	B13	X1-B:2
			2	B14	X1-B:3
4~20mA(Current Source)			3	B11	X1-B:5
			4	B12	X1-B:6
			5		

Figure 3-20 Inverter external terminal block X1

5) Communication Terminals

There are four communication terminals: 485 communication terminal for communication with the site host computer and CAN communication terminal for parallel communication.

3.2.5 1140V (315kW-630kW) Water-cooled Two / Four Quadrant Inverter Terminal Distribution

The external terminal distribution of 1140V (315kW-630kW) water-cooled two / four quadrant inverter is shown in Figure 3-21.

Terminals Block XT1						
Address				No. head		Address
External locking			1	DI15		X3-B:1
External fault			2	DI16		X3-B:2
Spare			3	DI17		X3-B:3
Reset			4	DI22		X3-B:4
Forward			5	DI23		X3-B:5
Reverse			6	DI24		X3-B:6
Emergency stop			7	DI25		X3-B:7
Multi-speed 1			8	DI26		X3-B:8
Multi-speed 2			9	DI27		X3-B:9
Spare			10	DI30		X3-B:10
Public side		○	11	24V3+		X3-B:11
		○	12			
		○	13			
Run			14	K0		X3-B:14
			15	D0		X3-B:15
Fault			16	K1		X3-B:16
			17	D1		X3-B:17
Spare			18	K2		X3-B:18
			19	D2		X3-B:19
Spare			20	K3		X3-B:20
			21	D3		X3-B:21
Analog output 1			22	A01		X3-B:22
Analog output 2			23	A02		X3-B:23
Analog output 3			24	A03		X3-B:24
Analog output 4			25	A04		X3-B:25
		○	26	GND13		X3-B:26
		○	27			
Analog input 3			28	AI2		X3-B:28
Analog input 4			29	AI3		X3-B:29
			30	GND14		X3-B:30
		○	31			
485 communication		○	32	485A1	Red	X4-B:2
			33	485B1	Black	X4-B:3
CAN communication			34	CANL	Red	X4-B:4
			35	CANH	Black	X4-B:5

Figure 3-21 1140V (315kW-630kW) water-cooled two / four quadrant inverter external terminal distribution

1) Digital input and power supply terminals

The digital input and power supply group contains 13 terminals, DI15-DI17, DI22-DI27, a total of 9 digital input terminals, and 24V power supply common terminal. When the corresponding terminal is connected to the 24V terminal, it is defined as high level and the digital quantity is 1; when it is open, it is defined as low level and the digital quantity is 0.

The DI15 and DI16 terminals are the blocking and fault signals from the external site respectively, and are connected to the IO board of the inverter.

Any of the DI22-DI27 terminals can be set by the display panel to give one of the functions listed in Table 3-6.

Table 3-6 Functions of DI1-DI6 Terminals

Function	Description	Default parameters
Reset DI22	When the system detects a change from low to high level in the corresponding control terminal, this function is valid and the inverter will try to reset the system fault. If the system fault source is eliminated, the system will reset the existing fault information. If there is still a system fault, the corresponding fault message will continue to be displayed.	P5-00 set to 9 (emergency stop)
Forward DI23	When the corresponding control terminal is high, the function is valid and the motor will run forward: when the terminal is low, the motor will stop running (without self-locking).	P5-01 set to 1 (forward rotation)
Reverse DI24	When the corresponding control terminal is high, the function is valid and the motor runs in reverse; when the terminal is low, the motor will stop running (without self-locking).	P5-02 set to 2 (reverse)
Emergency stop DI25	When the corresponding control terminal is high level, the function is valid and the inverter will be executed to stop immediately; when the terminal is low level, no treatment will be done to the inverter. If an accident occurs in the inverter field equipment, the inverter needs to be operated for emergency stop.	P5-03 set to 47 (emergency stop)
Multi-speed 1 DI26	The four states of the two terminals enable the setting of four speed segments or four other commands.	P5-04 set to 12 (multi-speed 1)
Multi-speed 2 DI27		P5-05 set to 13 (multi-speed 2)

2) Digital output terminals

There are four groups of digital outputs, which are normally open point operation signals K0 and D0, normally open point fault signals K1 and D1, and two groups of backup signals.

3) Analog output terminals

There are 4 analog output terminals for 2 groups of analog outputs. The inverter can output two analog signals AO1 and A02, and the user can choose to output 0-10V voltage signal or 0-20mA/4-20mA current signal by changing the parameters. (AO3 and AO4 are not defined in the program)

4) Analog input terminals

There are 4 analog input terminals for 1 group of analog inputs. Analog input 3 corresponds to the third analog input AI3, while analog input 4 is not defined in the program.

In addition, the external X1 terminal block (see Figure 3-22) leads to a separate analog input terminal, and the inverter speed is set (4-20mA).

The first analog input AI1 is connected to the main control after the intrinsically safe isolation. When the external analog signal is given as the current source signal, it is connected to terminals 5 and 6 of X1, and when the external analog signal is given as the transmitter signal, it is connected to terminals 2 and 3 of X1.

The user can change the parameters to determine the frequency channel of the analog input.

Inverter cabinet explosion-proof terminal X1			
Wiring cavity end B		Explosion-proof cavity inner end A	
Address No.		No.	Address
	1	B13	GL2:1
4~20mA(Transmitter)	2	B14	GL2:2
	3		
	4		
4~20mA(Current Source)	5	B11	GL2:3
	6	B12	GL2:4
	7		
	8		
	9		

Figure 3-22 Inverter external terminal block X1

5) Communication terminals

There are 4 communication terminals, which are a set of 485 communication terminals for communication with the site host computer, and a set of CAN communication terminals for parallel communication.

Chapter 4 Operating Instructions

4.1 Display Panel

The following display panel is currently used to display the parameters of the explosion-proof 660V250kW four-quadrant air-cooled model, the 1140V630kW two-quadrant air-cooled model, the 1140V630kW two-quadrant water-cooled model, and the 1140V630kW four-quadrant water-cooled model.

The display panel, shown in Figure 4-1, consists of a data display area, an indicator light, and a keypad area. The keypad area is not operable and must be replaced by a metal keyboard (one key less, but no different from the keypad area of the display panel).

4.1.1 Data Display Area

It is composed of 5 LED digital tubes, which can display parameters, data and fault codes, etc. The parameters and display contents can be changed by the mine explosion-proof metal keyboard.

4.1.2 Panel Indicator

The functions of the indicator lights are shown in Figure 4-1, refer to Table 4-1

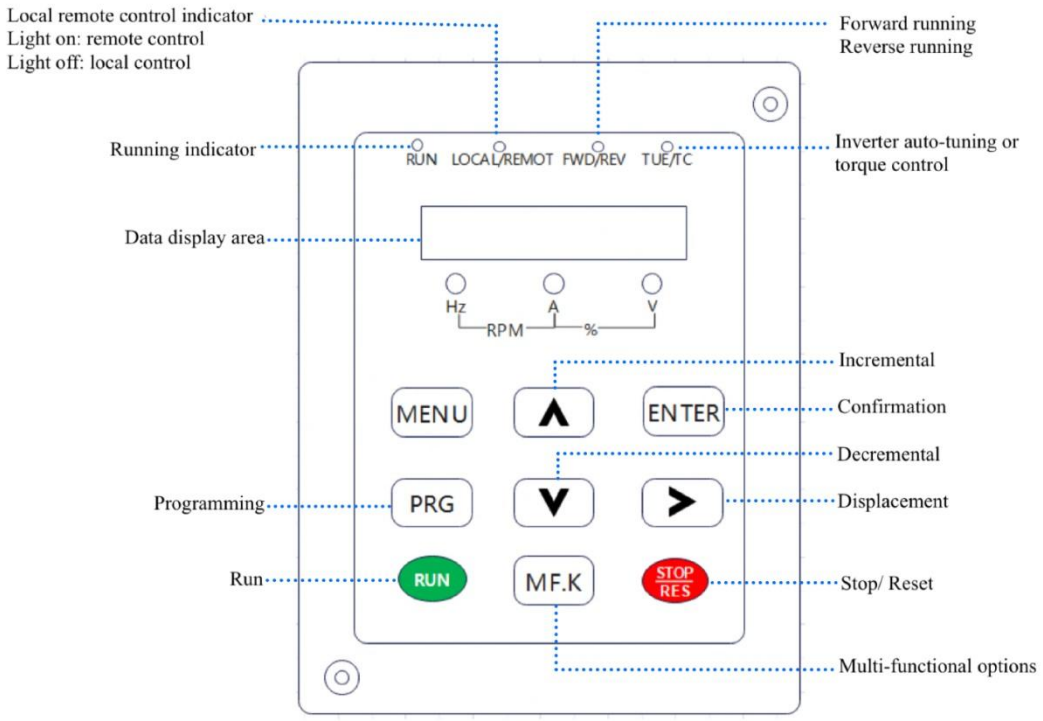


Figure 4-1 Display Panel Diagram

Table 4-1 Display Panel Key Functions

Symbols	Description	Note
RUN	On: running, Off: stop	
LOCAL/REMOT	On: main contactor is engaged	
FWG/REV	Off: main contactor disconnected	
TUNE/TC	Standby	
Hz	On: fault, Off: no fault	The combination of the 3 lamps indicates the P3 zone data (for reference only), Hz is on to indicate that the data displayed is P3-2X data, if X is an even number, V is on, otherwise V is off.

4.2 Mining Explosion-proof Metal Keypads

4.2.1 Metal Keypad 1

The current explosion-proof 1140V630kW two-quadrant air-cooled model uses the following Figure 4-2 Explosion-proof metal keypad for parameter operation.

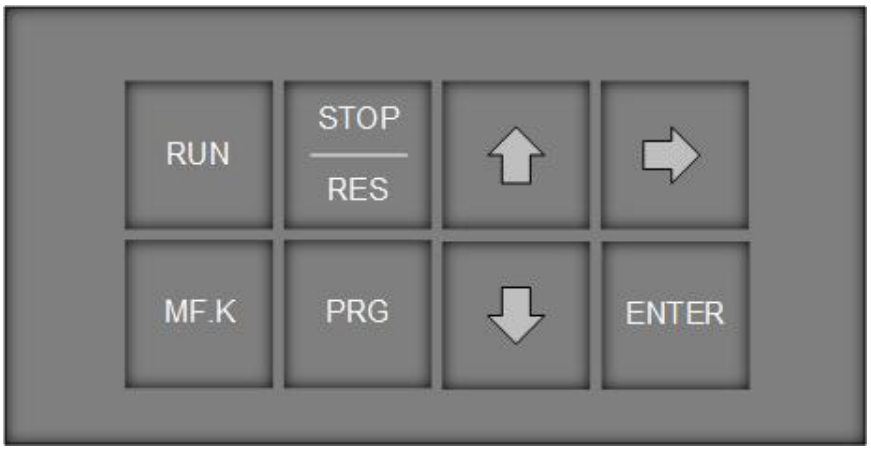


Figure 4-2 Mining Explosion-proof Metal Keypad

As shown in Figure 4-2, the mining explosion-proof metal keypad is used to replace the display panel operation keys, which correspond to Table 4-2.

Table 4-2 Mining Explosion-proof Metal Keypad Key Functions

Panel Keys	Keyboard Keys	Name	Function
RUN	Start	Running key	For power-on operation.
MF.K	Multi-function	Multi-function selection key	Multiple function switching
STOP/RES	Stop / Reset	Stop/Reset key	When running state, press this key can be used to stop running operation. When the fault alarm state, it can be used to reset the operation.
PRG	Programming	Programming Key	One-level menu entry or exit.
∧	⇧	Increment key	Increment of data or function code.
∨	⇩	Decrement key	Decrement of data or function code.
➢	⇨	Shift key	The display parameters can be cyclically selected under the stop display screen and the operation display screen; When modifying the parameters, the modification bit of the parameters can be selected.
ENTER	Confirmation	Confirmation key	Confirmation of entering the menu screen and setting parameters step by step.

The three-level menu structure is used for parameter setting and other operations. The three levels of menu are: function parameter group (Ⅰ menu) → function code (Ⅱ menu) → function code set value (Ⅲ menu).

Click the "Program" button until the panel displays Px (x=0,1,2,3).

Click the "Confirm" button and the panel will display Px-00.

Click the "Increment" or "Decrement" button until the panel displays the target parameter code.

Click the "Confirm" button.

Click the "Shift", then the panel digital tube is in flashing state, flashing shift bit to the target modification bit.

Click on the "Increment " or "Decrement key" until the flashing bit is the target value.

Click the "Programming" button to finish the parameter modification.

4.2.2 Metal Keypad 2

The following metal keypad is currently used to set the parameters for three models: the explosion-proof 660V250kW four-quadrant air-cooled model, the 1140V630kW two-quadrant air-cooled model, the 1140V630kW two-quadrant water-cooled model, and the 1140V630kW four-quadrant water-cooled model.

The actual parameter changes are made by the explosion-proof metal keypad.

As shown in Figure 4-3, the metal keypad has 12 keys, including PRG/ESC, QUICK/JOG, RUN, ↑, ↓, DATE/ENT, →/SHIFT, and STOP/RST, and the user can operate and set the parameters of the inverter through the metal keys as needed.

Figure 4-3 Metal keypad of the inverter

The 8 keys on the metal keypad have their own functions, and the 8 keys on the display panel correspond to the 8 keys on the metal keypad. Note that the Stop button can also be used as a fault reset button when the motor is stopped in the status display mode.

Table 4-3 Button Menu

Metal Keypad Button	Display Panel Keypad	Name	Function
PRG/ESC		Programming Keys	One-level menu entry or exit, quick parameter deletion
DATE/ENT		Confirmation key	Step-by-step access to menu screens and confirmation of set parameters
↑		Incremental key	Increment of data or function code
↓		Decrease key	Decrease of data or function code
→ /SHIFT		Shift key	In the stop display interface and operation display interface, you can move right to select the display parameters; when modifying the parameters, you can select the modification bit of the parameters.
RUN		Run key	In the keyboard operation mode, it is used for running operation.
STOP/RST		Stop / Reset	In the operation mode, this key is used to stop the operation; the function of this key is determined by function code F17.05; in the fault alarm mode, this key can be used to reset the operation in all control modes.
QUICK/JOG		Multi-function keys	The function of this key is determined by the function code F17.03

4.3 Mining Explosion Proof Mouse

The following explosion-proof mouse is currently used to operate the parameters of the explosion-proof 1140V400kW two-quadrant water-cooled model and the 1140V400kW four-quadrant water-cooled model. When operating, the mouse pointer position can be adjusted with the scroll wheel, and the left mouse button is used for confirmation by clicking.

Figure 4-4 Explosion-proof mouse

Chapter 5 Dimension and Weight

5.1 Overall Dimension

(1) BPJ1-□/1140K

This product is composed of DKB1 - □ / 1140L mining flameproof filter reactor and BPJ1 - □ / 1140k series mining flameproof and intrinsically safe AC frequency converter, as shown in the following figure:

- DKB1 - □ / 1140L mining flameproof filter reactor, overall dimension : 1706mm×894mm×1042mm (D*W*H)

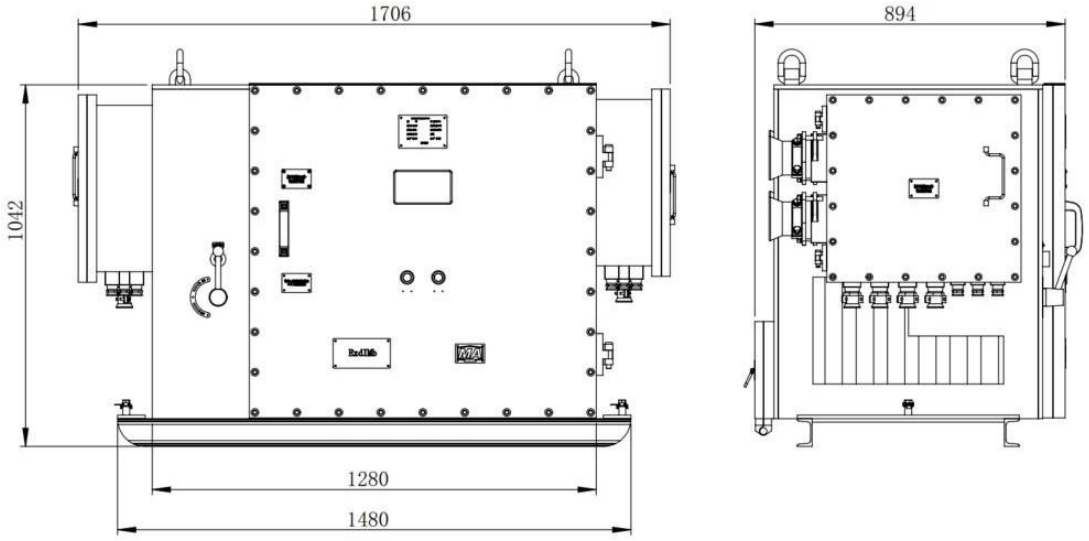


Figure 5-1 overall dimensions of DKB1 - □ / 1140L mining flameproof filter reactor

- BPJ1 - □ / 1140k series mine flameproof and intrinsically safe AC frequency converter, overall dimension: 2234mm×949mm×1235mm (D*W*H)

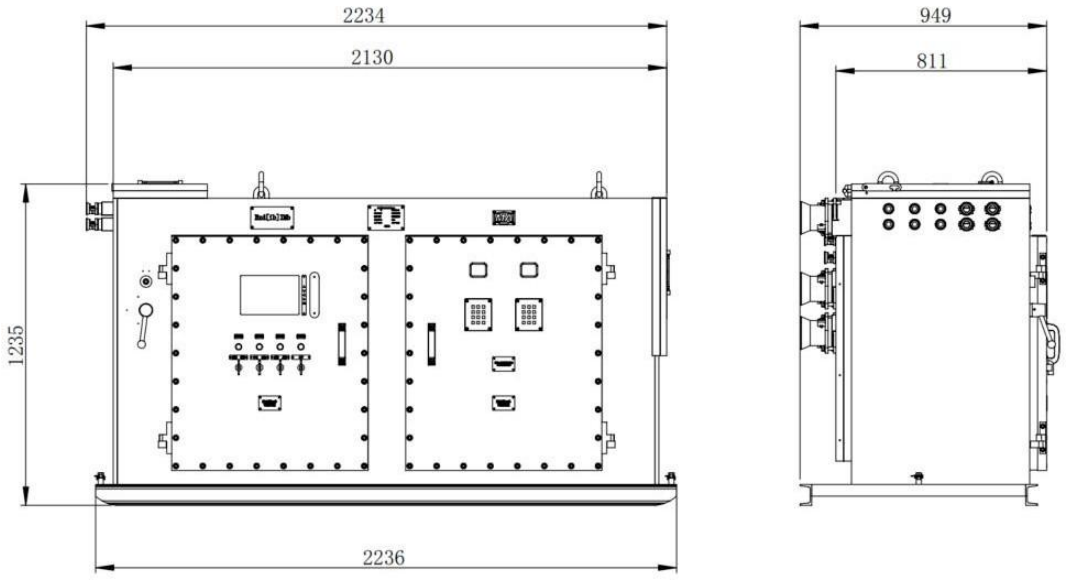


Figure 5-2 outline dimensions of bpj1 - □ / 1140k mine flameproof and intrinsically safe AC frequency converter

（2）BPJ1-□/660K

BPJ1 - □ / 660k series mine flameproof and intrinsically safe AC frequency converter, overall dimension: 2134mm×1221mm×1235mm (D*W*H)

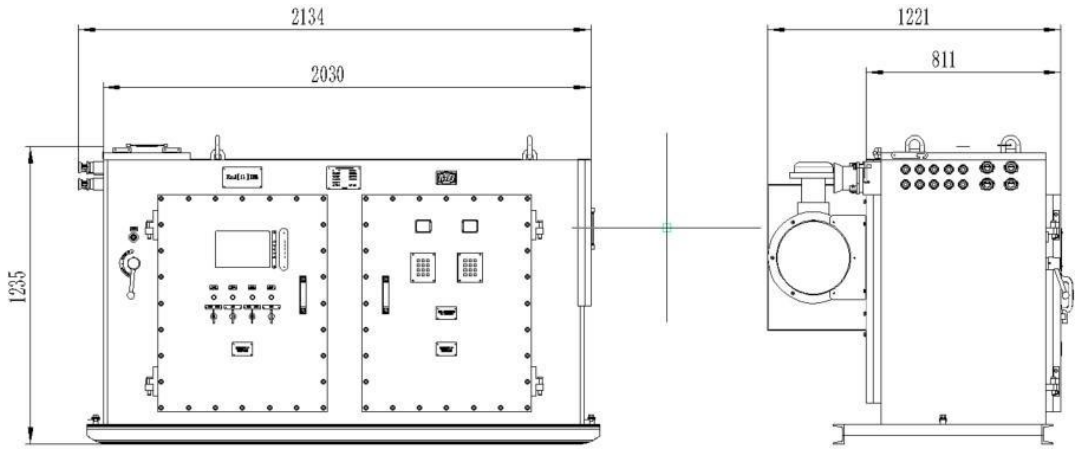


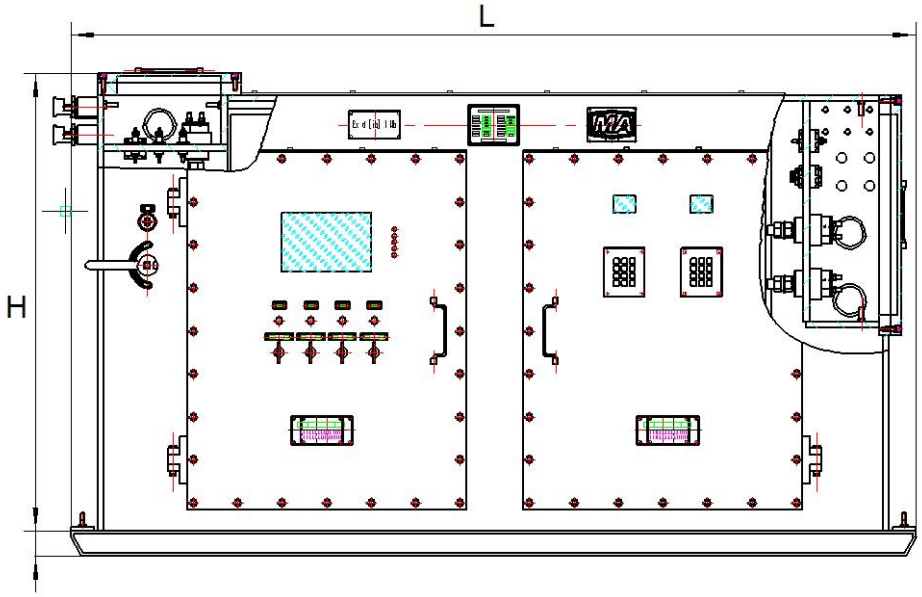
Figure 5-3 outline dimensions of BPJ1 - □ / 660k mine flameproof and intrinsically safe AC frequency converter

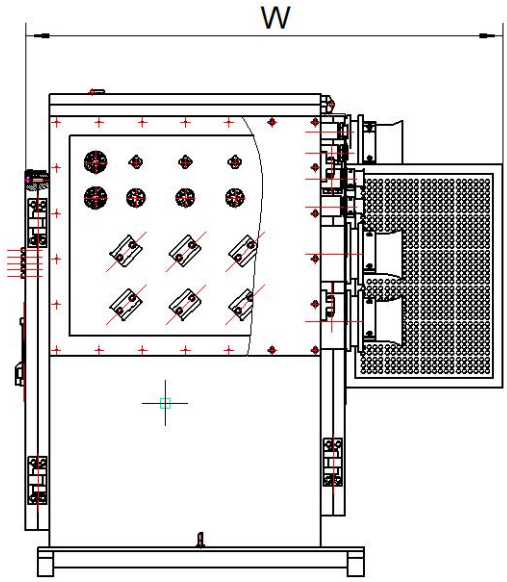
5.2 Weight

Table 5-1 equipment weight list

Type No	Weight
DKB1 - □ / 1140L mining flameproof reactor	1300Kg
BPJ1 - □ / 1140k mine flameproof and intrinsically safe AC frequency converter	3500Kg
BPJ1 - □ / 660k mining flameproof and intrinsically safe AC frequency converter	3000Kg

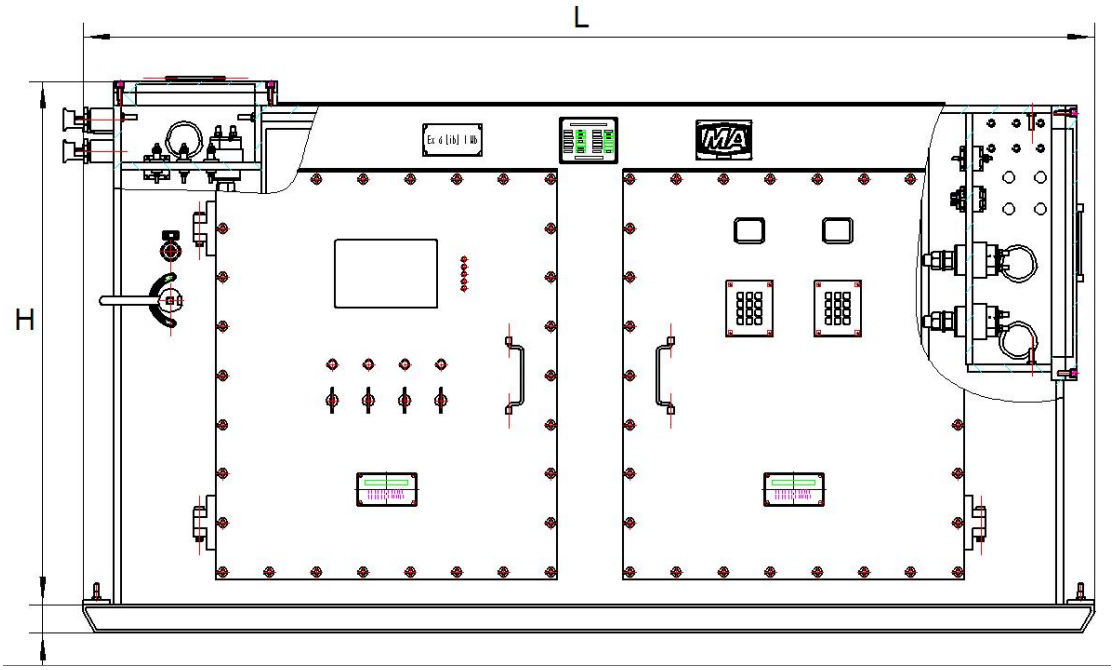
（1）660V

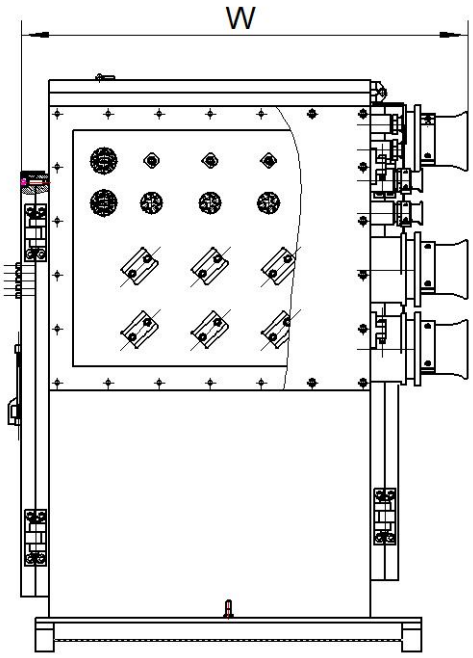




Model	Power	Current	Dimension			Weight
			L	W	H	
BPJ1-132/660K	132kW	135A	2136	1206	1218	3000Kg
BPJ1-200/660K	200kW	204A	2136	1206	1218	3000Kg
BPJ1-250/660K	250kW	255A	2136	1206	1218	3000Kg

（2）1140V

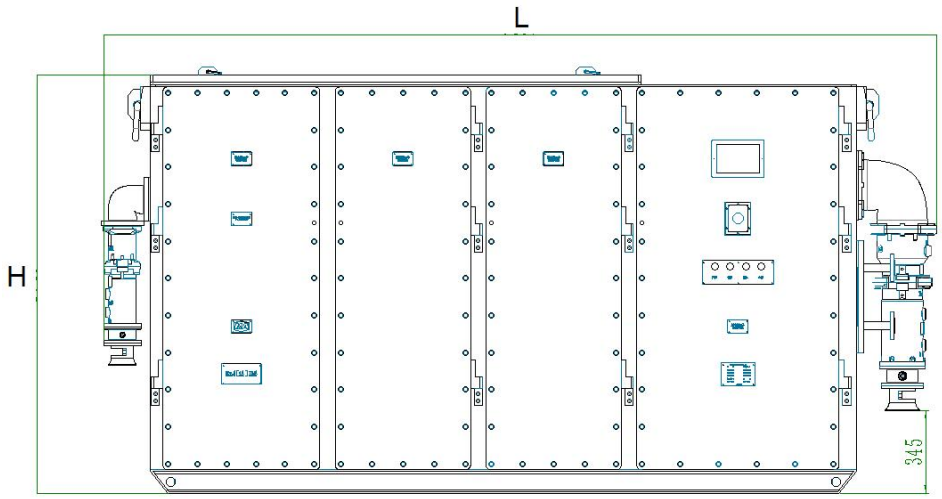


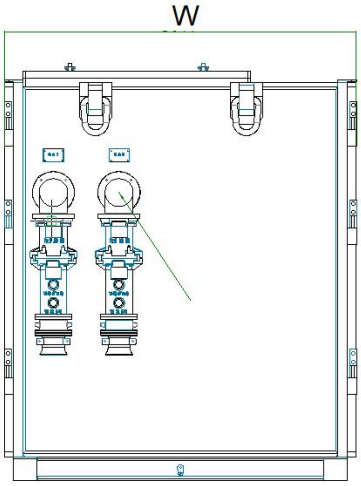


Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
BPJ1-315/1140K	315kW	190A	2236	979	1218	3500Kg
BPJ1-400/1140K	400kW	240A	2236	979	1218	3500Kg
BPJ1-500/1140K	500kW	310A	2236	979	1218	3500Kg
BPJ1-630/1140K	630kW	377A	2236	979	1218	3500Kg
DKB1-315/1140L	325kW	190A	1690	884	1042	1300Kg

DKB1-400/1140L	400kW	240A	1690	884	1042	1300Kg
DKB1-500/1140L	500kW	310A	1690	884	1042	1300Kg
DKB1-630/1140L	630kW	377A	1690	884	1042	1300Kg
BPJ1-630/1140	630kW	377A	2563	1284	1320	3500Kg
BPJ1-75（90、110、132、160、200、250、315、400）/1140	75（90、110、132、160、200、250、315、400）kW		1500	930	1250	2500Kg
BPJ1-500/1140	500kW	310A	2240	979	1218	3500Kg
BPJ1-630/1140	630kW	377A	2240	979	1218	3500Kg
BPJ1-75（90、110、132、160、200、250、315、400）/1140	75（90、110、132、160、200、250、315、400）kW		1500	930	1250	2500Kg

（3）3.3kW

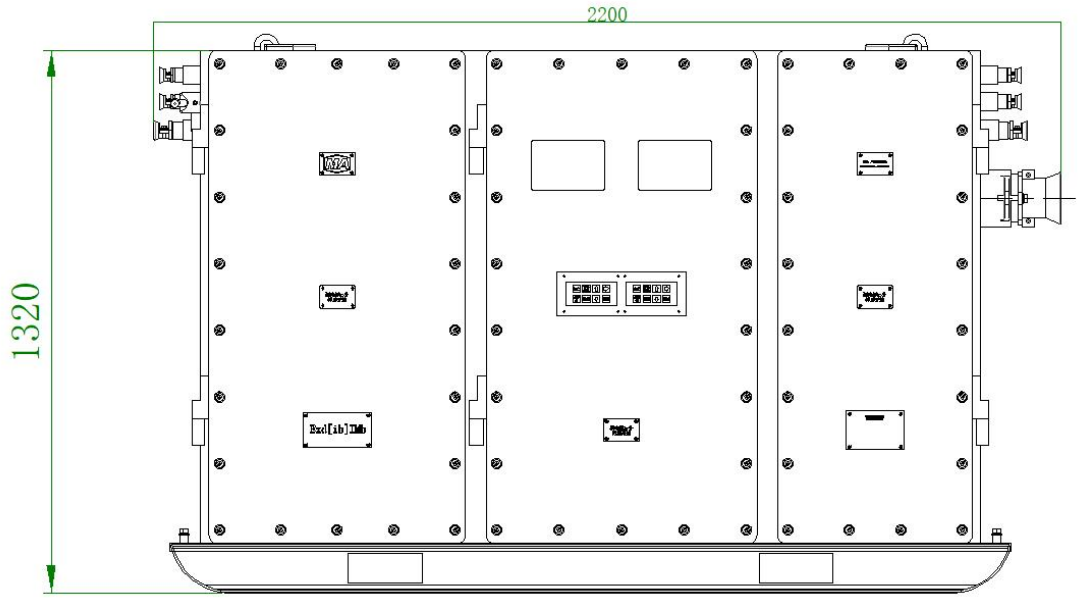


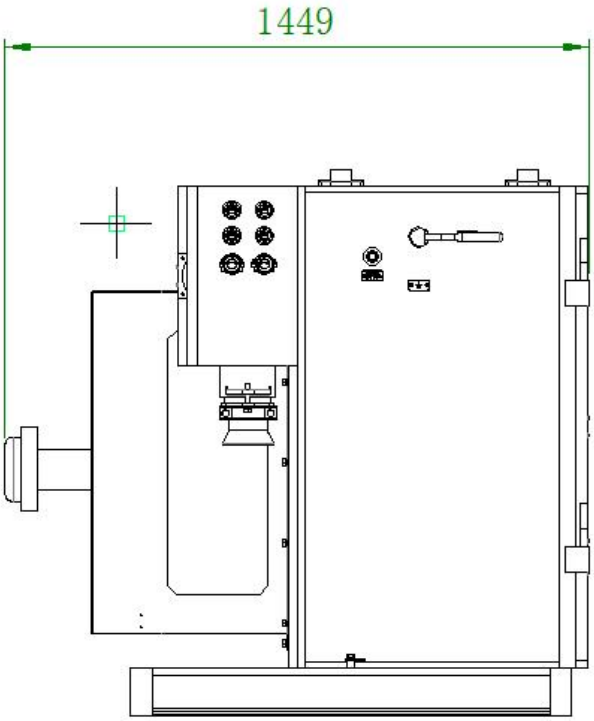


Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
BPBJV1-525/10/3.3	525kW	110A	3480	1500	1748	13t
BPBJV1-855/10/3.3	855kW	180A	3480	1500	1748	13t
BPBJV1-1000/10/3.3	1000kW	210A	3480	1500	1748	13t
BPBJV1-1250/10/3.3	1250kW	260A	3480	1500	1748	13t
BPBJV1-1400/10/3.3	1400kW	290A	3480	1500	1748	13t
BPBJV2-525（855、1000、1200、1400、1600、1800、2000、2200、）kW-6-3.3	525（855、1000、1200、1400、1600、1800、2000、2200、）kW		3000	1420	1800	Kg

（4）BPBJV2-2200-10、 BPBJV2-2200-6 无图

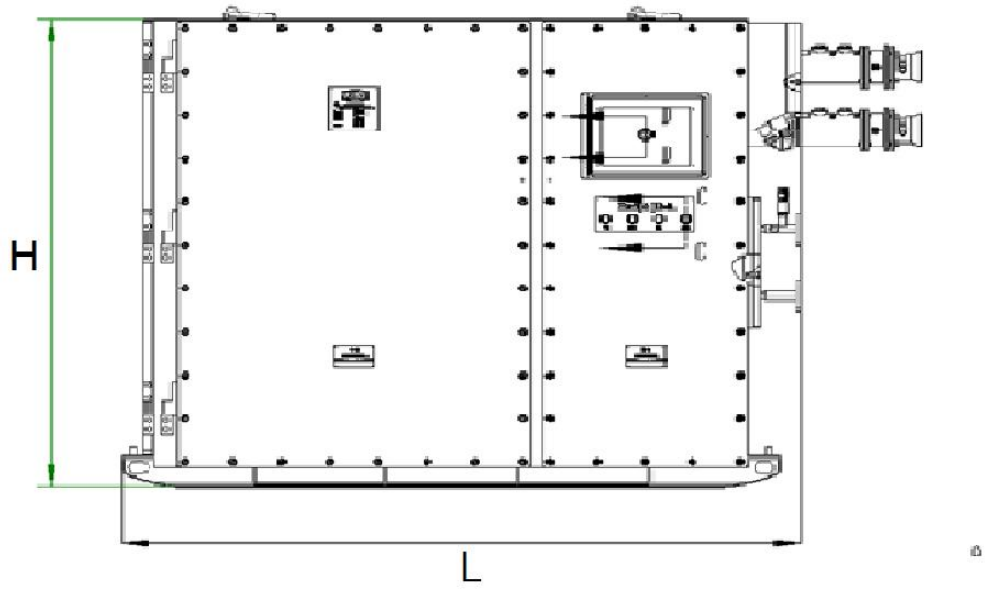
（5）WJ1-500/1140

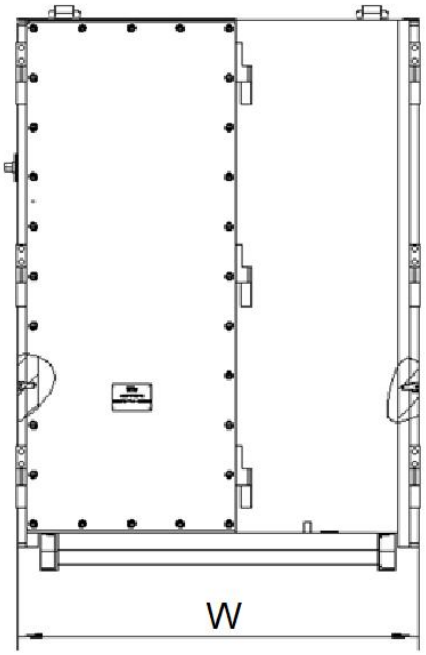




Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
WJ1-500/1140	500（kvar）	254A	2200	1449	1320	3000Kg

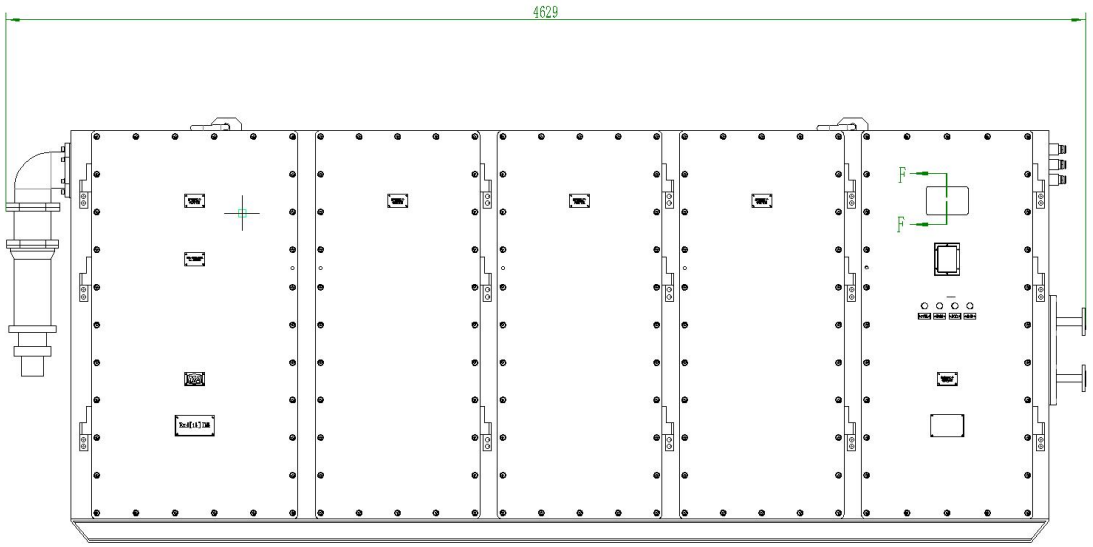
（**6**）WJL1-□/3.3

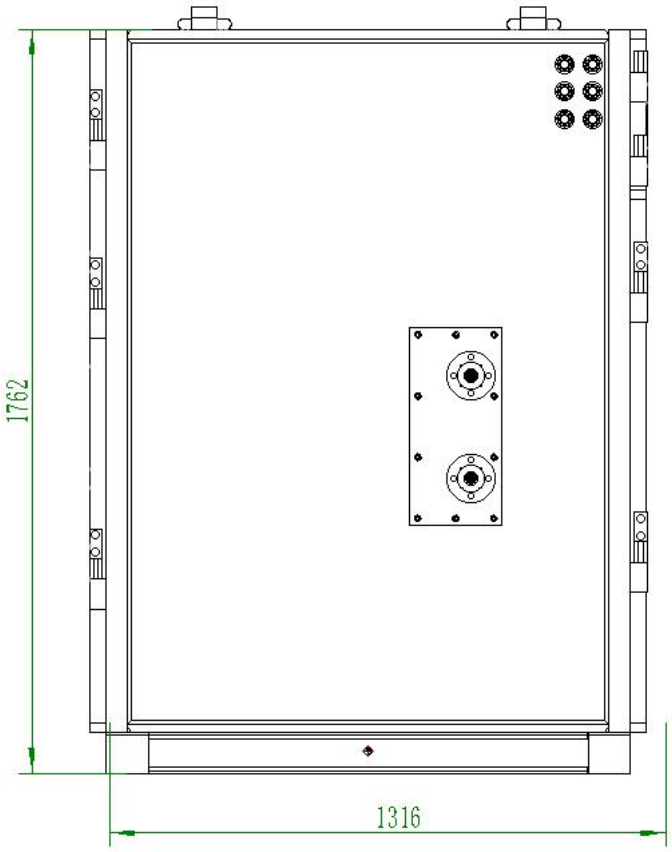




Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
WJL1-2100/3.3	2100（kvar）		2065	1250	1695	12t
WJL1-1000/3.3	2100（kvar）		2065	1250	1695	12t

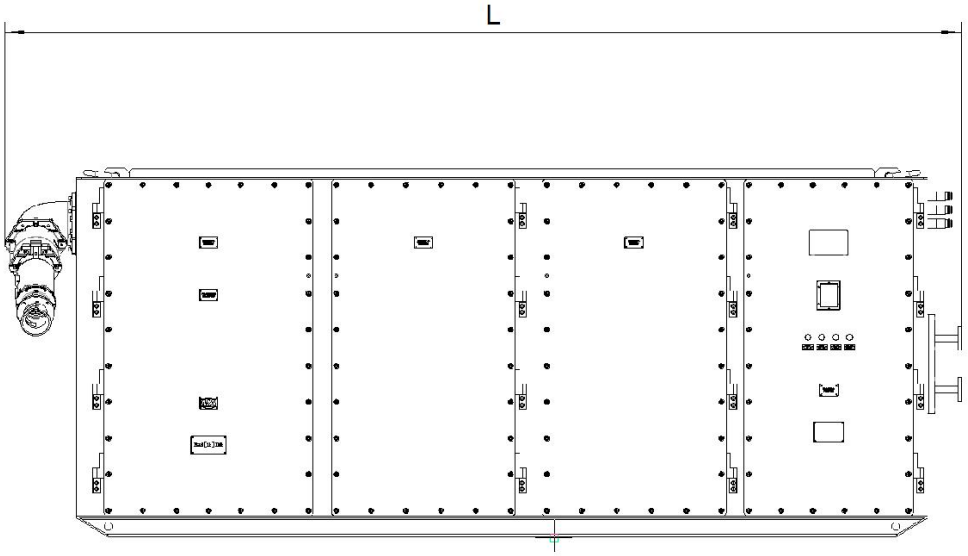
（**7**）WJL1-2500/6

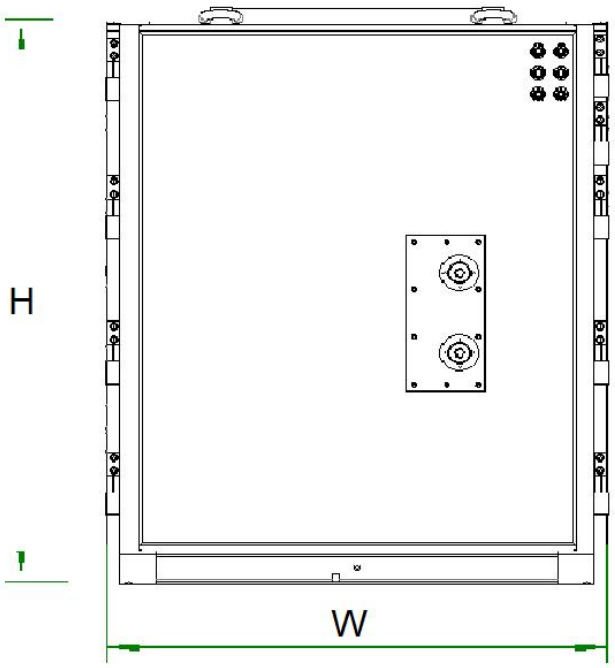




Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
WJL1-2500/6	2500（kvar）	240A	4629	1316	1762	12t

（**8**）WJL1-□/10





Model	Power	Current	Dimension (mm)			Weight
			L	W	H	
WJL1-4000/10	4000（kvar）	231A	4497	1400	1755	12t
WJL1-5000/10	5000（kvar）	289A	4497	1400	1755	12t
WJ1-6000/10	6000（kvar）	346A	4497	1400	1755	12t

Chapter 6 Functional Parameters

There are two types of explosion-proof inverter control architectures, the FG2100-based control architecture and the new generation FD3000-based control architecture, which are described below.

6.1 FD3000-based Control Structure Functional Parameters

6.1.1 Introduction to Function Code Setting

The function parameters are grouped by function, and each function group includes several function codes. For example, "F08.08" means the 8th function code of the F08 group, and F99 is the manufacturer's function parameter, and the user has no right to access this group.

In order to facilitate the setting of function codes, when using the operation panel, the function group number corresponds to the first level menu, the function code number corresponds to the second level menu, and the function code parameter corresponds to the third level menu.

1、The contents of the columns of the menu are explained as follows.

Column 1 "Function Code": the number of the functional parameter group and parameter.

Column 2 "Name": the complete name of the functional parameter.

Column 3 "Parameter details": the detailed description of the functional parameter.

Column 4 "Setting range": the valid setting range of the function parameter, which is displayed on the LCD of the operation panel.

Column 5 "Default value": the factory original setting value of the function parameter.

Column 6 "Change": is the change attribute of the functional parameter (i.e. whether change is allowed and the change condition), which is described as follows.

"○": Indicates that the set value of the parameter can be changed when the inverter is stopped or in operation.

"◎": Indicates that the setting value of the parameter cannot be changed when the inverter is in operation.

"●": Indicates that the value of this parameter is the actual test record value and cannot be changed.

(The inverter has made an automatic check constraint on the modification attribute of each parameter, which can help users avoid mistaken modification.)

Column 7 "Serial number": The serial number of the function code in the whole function code, and also indicates the register address at the time of communication.

2、"Parameter decimal" is decimal (DEC), if the parameter is expressed in hexadecimal, the data of each bit is independent of each other when the parameter is edited, and the value range of some bits can be hexadecimal (0~F).

3、The "default value" indicates the value after the function code parameter is refreshed when the factory parameter operation is restored; however, the actual detected parameter value or the recorded value will not be refreshed.

4、In order to protect the parameters more effectively, the inverter provides password protection for the function code. After setting the user password (i.e. the parameter of user password F17.00 is not 0), when the user presses the PRG/ESC key to enter the function code editing status, the system will first enter the user password verification status, and the display will be "0.0.0.0.0.", and the operator must input the user password correctly, otherwise it cannot be entered. For the factory-set parameters area, you must also enter the factory password correctly before entering. (Remind users not to try to modify the factory-set parameters, as improper setting of parameters may lead to abnormal operation of the inverter or even damage.) If F17.00 is set to 0, the user password can be canceled; if F17.00 is not 0 at power-on, the parameters are protected by the password.

5、When using serial communication to modify the function code parameters, the user password function also follows the above rules.

6.1.2 Summary Table of Function Groups

Table 6-1 Summary Table of Function Groups

Function code group	Number	Function code group	Number
Group F00: Basic function group	20	Group F17: Keyboard display group	28
Group F01: the first motor parameter group	31	Group F18: Status view function group	57
Group F02: the first motor encoder group	25	Group F19: Closed-loop control status view function group	36
Group F03: the first motor vector control group	44	Group F20: Expansion card status view function group	10
Group F04: the first motor VF control parameters group	35	Group F21: Position control group	31

Group F05: torque control parameter group	10	Group F22: Spindle positioning group	25
Group F06: start-stop control group	26	Group F23: Extended IO card input function group	41
Group F07: Control optimization parameter group	43	Group F24: Extended IO card output function group	23
Group F08: Input terminal group	54	Group F25: Master-slave control function group	7
Group F09: Output terminal group	35	Group F26: Expansion card reserved function group	30
Group F10: Auxiliary function group	46	Group F27: Reserved function group	40
Group F11: PID control group	22	Group F28: Second motor parameter group	28
Group F12: Multi-Speed and Simple PLC Group	38	Group F29: Second motor encoder group	25
Group F13: Fault and Protection Group	54	Group F30: Second motor vector control group	15
Group F14: ModBus communication group	7	Group F31: Second motor VF control parameter group	21
Group F15: Communication expansion card 1 function group	43	Group F90: AIAO calibration function group	44
Group F16: Communication expansion card 2 function group	54	Group F99: Factory function group	8
Total: 1022			

6.1.3 Summary Table of Functional Parameters

The content and page numbers of the functional parameters are too many to be repeated here, so please refer to the Table 6-4 for details

6.2 Functional Parameters of the FG2100-based Control Architecture

6.2.1 Explanation of Symbols in the Table

"☆": It means the setting value of this parameter can be changed when the inverter is in the stop and running state.

"★": It means the setting value of this parameter cannot be changed when the inverter is in operation.

"●": It means the setting value of this parameter is the actual recorded value, and cannot be changed.

6.2.2 Summary Table of Function Group

Table 6-2 Summary Table of Function Groups

Function Groups	Name
P0	Basic function group
P1	The first motor parameters
P2	The first motor vector control parameters
P3	Start-stop control
P4	V/F control parameters
P5	Input terminal
P6	Output terminals
P7	Fault and protection
P8	PID function
P9	Multi-segment command, simple PLC
PA	Pendulum frequency, length and count
Pb	Keypad and display
PC	Auxiliary functions
Pd	Communication parameters

PE	User defined function codes
PF	Factory parameters
PP	Function code management
A0	Torque control parameters
A1	Virtual IO
A2	Second motor control
A5	Control optimization parameters
A6	Analog input curve setting
A8	Point-to-point communication
AC	AIAO calibration

6.2.3 Summary Table of Functional Parameters

Table 6-3 Summary table of parameters

Function code	Name	Parameter Description	Set range	Default value	Change
Group F00 Basic function group					
F00.00	Inverter GP type	0: Model G machine 1: P-type machine	0~1	0	◎
F00.01	Motor control mode	0: No speed sensor vector control 1: Speed sensor vector control 2: V/F control	0~2	2	◎
F00.02	Run instruction selection	0: keyboard 1: terminal 2: Communication	0~2	0	○

F00.03	Primary frequency source selection	0: keyboard number setting 1: Set analog quantity AI1 2: Set analog quantity AI2 3: Reserve 4: High speed pulse HI1 setting 5: simple PLC program setting 6: multi-stage speed operation setting 7: PID control setting 8: MODBUS communication Settings 9: PROFIBUS/CANopen communication Settings 10: Reserve 11: High speed pulse HI2 setting 12: pulse train AB setting 13: Profinet communication Settings 14: Reserve 15: reserved	0~15	0	○
F00.04	Auxiliary frequency source selection	Same as F00.03 (primary frequency source selection)	0~15	15	○
F00.05	Auxiliary frequency source reference selection	0: relative to the maximum frequency 1: relative to the main frequency source	0~1	0	○
F00.06	Primary and secondary superimposed selection	0: master frequency instruction 1: auxiliary frequency instruction 2: (primary + secondary) combination 3: (primary - secondary) combination 4: indicates the maximum value of the primary and secondary components 5: minimum value of both primary and secondary	0~5	0	○
F00.07	Maximum frequency	Max（F00.08，10.00）~630.00Hz	Max（F00.08，10.00）~630.00	50.00Hz	◎
F00.08	Upper limit frequency	Lower limit frequency (F00.09) to maximum frequency (F00.07)	F00.09~F00.07	50.00Hz	◎
F00.09	Lower limit frequency	0.00Hz to Upper limit (F00.08)	0.00~F00.08	0.00Hz	◎
F00.10	Frequency digital setting	0.00 Hz to Maximum frequency (F00.07)	0.00~F00.07	50.00Hz	○

F00.11	Direction of operation	0: indicates the default direction 1: runs in the opposite direction 2: Reverse operation is disabled	0~2	0	○
F00.12	Carrier frequency	0.5~4.0kHz	0.5~4.0	Model determination	○
F00.13	Acceleration time 1	0.0~3600.0s	0.0~3600.0	Model determination	○
F00.14	Deceleration time 1	0.0~3600.0s	0.0~3600.0	Model determination	○
F00.15	Frequency resolution	0~1 0：0.01HZ 1：0.1HZ	0~1	0	○
F00.16	Set frequency action selection in case of power failure	0x000~0x111 One bit: digit setting frequency action selection in case of power failure 0: stored in case of power failure 1: Clear the device in case of power failure Tens place: MODBUS setting frequency Action selection when power failure occurs 0: stored in case of power failure 1: Clear the device in case of power failure Hundred bit: other communication setting frequency action selection in case of power failure 0: stored in case of power failure 1: Clear the device in case of power failure	0x000~0x111	0x000	○
F00.17	Acceleration and deceleration time reference frequency	0: indicates the maximum output frequency 1: Set the frequency 2. 100Hz Note: Only effective for linear acceleration and deceleration	0~2	0	◎
F00.18	Communication running instruction channel selection	0: indicates the MODBUS communication channel 1: PROFIBUS communication channel/CANopen communication channel	0~5	0	○

		2: Reserve 3: Profinet communication channel 4: Reserve 5: Reserve Note: 1, 2, 3, 4 and 5 are extended functions, which can only be used by inserting a card			
F00.19	No speed sensor vector control mode selection	0: indicates mode 0 1: indicates mode 1	0~1	0	◎
F00.20	Power frequency bypass closing instruction	0: The power frequency command is invalid 1: The power frequency instruction is	0~1	0	◎
Group F01 First motor parameter group					
F01.00	Motor type selection	0: asynchronous motor 1: synchronous motor	0~1	0	◎
F01.01	Rated power of induction motor	0.1~3000.0Kw	0.1~3000.0	Model determination	◎
F01.02	Rated voltage of induction motor	0~1200V	0~1200	Model determination	◎
F01.03	Rated current of induction motor	0.8~6000.0A	0.8~6000.0	Model determination	◎
F01.04	Rated frequency of induction motor	0.01Hz to Max frequency (F00.07)	0.01~F00.07	50.00 Hz	◎
F01.05	Rated speed of induction motor	1~60000rpm	1~60000	Model determination	◎
F01.06	Stator resistance of induction motor	0.001~65.535Ω	0.001~65.535	Model determination	○
F01.07	Rotor resistance of induction motor	0.001~65.535Ω	0.001~65.535	Model determination	○
F01.08	Induction motor leakage	0.1~6553.5mH	0.1~6553.5	Model Determination	○
F01.09	Induction motor mutual induction	0.1~6553.5mH	0.1~6553.5	Model Determination	○
F01.10	No-load current of induction motor	0.1~6553.5A	0.1~6553.5	Model Determination	○
F01.11	Magnetic	0.0~100.0%	0.0~100.0	80.0%	○

	saturation coefficient of induction motor core 1				
F01.12	Magnetic saturation coefficient of induction motor core 2	0.0~100.0%	0.0~100.0	68.0%	○
F01.13	Induction motor core magnetic saturation factor 3	0.0~100.0%	0.0~100.0	57.0%	○
F01.14	Magnetic saturation coefficient of induction motor core 4	0.0~100.0%	0.0~100.0	40.0%	○
F01.15	Rated power of synchronous motor	0.1~3000.0Kw	0.1~3000.0	Model Determination	◎
F01.16	Rated voltage of synchronous motor	1~1200V	1~1200	Model Determination	◎
F01.17	Rated current of synchronous motor	0.8~6000.0A	0.8~6000.0	Model Determination	◎
F01.18	Rated frequency of synchronous motor	0.00Hz~maximum frequency (F00.07)	0.00~F00.07	50.00Hz	◎
F01.19	Number of synchronous motor poles	1~128	1~128	2	◎
F01.20	Stator resistance of synchronous motor	0.001~65.535Ω	0.001~65.535	Model Determination	○
F01.21	Straight shaft inductance of synchronous motor	0.01~655.35mH	0.01~655.35	Model Determination	○

F01.22	Inductance of alternating shaft of synchronous motor	0.01~655.35mH	0.01~655.35	Model Determination	○
F01.23	Back potential of synchronous machine	0~10000	0~10000	300	○
F01.24	Reserved variable	0~65535	0~65535	0	●
F01.25	Synchronous motor identification current	0%~50% (motor rated current)	0~50	10%	●
F01.26	Motor parameter display selection	0: Display by motor type 1: Show all	0~1	0	○
F01.27	Inertia of the motor system	0～30.000kgm2	0~30.000	0.000	○
F01.28	Motor parameter self-learning	0: No operation 1: Dynamic self-learning 2: Static self-learning 1 3: Static self-learning 2	0~3	0	◎
F01.29	Reserved variable	0~65535	0~65535	0	○
F01.30	HMI page flip register	120~135 120: Main Page 121: Run Record 122: Running Curve 123: Fault record 124: Historical fault record 125: Fault moment data 126: Pre-fault data 127: Post-fault data 128: Status table 129: Fault curve 130: Terminal status	120~135	120	○
Group F02 First motor encoder group					
F02.00	Encoder type display	0：Incremental encoder 1：Rotary encoder 2：Sin/Cos encoder 3: Endat absolute encoders	0~65535	0	●

F02.01	Encoder pulse count	0~60000	0~60000	1024	◎
F02.02	Encoder direction	Individual: AB direction 0: forward 1: reverse Ten: Z pulse direction (reserved) 0: forward 1: reverse Hundred: CD/UVW pole signal direction 0: forward 1: reverse	0~0x111	0x000	◎
F02.03	Encoder broken wire fault detection time	0.0~10.0s	0.0~10.0	2.0s	○
F02.04	Encoder reverse fault detection time	0.0~100.0s	0.0~100.0	0.8s	○
F02.05	Number of encoder detection filters	Digit: Number of low-speed filtering times Decimal: Number of high-speed filtering times	0~0x99	0x33	○
F02.06	Motor to encoder mounting shaft speed ratio	0~65.535	0~65.535	1.000	○
F02.07	Synchronous motor control parameters	Bit0: z pulse correction enable Bit1: Encoder angle correction enable Bit2: SVC speed measurement enable Bit3: Rotation speed mode selection Bit4：Z pulse capture mode Bit5: v/f control does not detect the initial angle of the encoder Bit6: CD signal correction enable Bit7：sin/cos subdivision speed disable Bit8: Self-learning does not detect encoder failure Bit9: z pulse detection optimization enable Bit10: First z-pulse correction optimization enable Bit12: Stop clearing z-pulse arrival signal	0x0000~0xFFFF	0x0003	○
F02.08	Z-pulse break detection enable	0x00~0x11 Bits: Z pulse 0：No detection 1：Enable Ten bits: UVW pulse (for synchronous	0x00~0x11	0x10	○

		motor) 0：No detection 1：Enable			
F02.09	Z-pulse initial angle	0~359.99	0~359.99	0.00	○
F02.10	Initial pole angle	0~359.99	0~359.99	0.00	○
F02.11	Initial pole position learning	0~3 0: No operation 1: Rotation self-learning 2：Static self-learning 3：Selective self-learning 2	0~3	0	◎
F02.12	Velocimetry optimization selection	0: No optimization 1: Optimization method 1 2: Optimization mode 2	0~2	1	◎
F02.13	CD signal zero bias gain	0~65535	0~65535	0	○
F02.14	Encoder type selection	Digit: Incremental encoder 0: without UVW 1: with UVW Ten bits: Sin/Cos encoder 0: without CD signal 1: with CD signal	0x00~0x11	0x00	◎
F02.15	Speed measurement method selection	0：PG card 1: Native, realized by HI1,I2, only support incremental 24V encoder	0~1	0	◎
F02.16	Frequency division coefficient	0~255	0~255	0	○
F02.17	Pulse filtering selection	0x0000~0xFFFF Bit0：encoder P-way input filtering enable 0: No filtering 1：filtering Bit1：encoder signal filtering mode 0：Adaptive filtering 1: Use F02.18 filtering parameters Bit2: Encoder P-way divider output filtering enable 0: No filtering 1：filtering Bit3: Pulse given F-way divider output	0x0000~0xFFFF	0x0033	○

		filter enable 0: No filtering 1：filter Bit4：Pulse given F-way filter enable 0: No filtering 1：filter Bit5：Pulse to give the F-way filtering mode 0：Adaptive filtering 1: Use F02.19 filtering parameters Bit6：Division output source selection 0：P-way 1：F-way Bit7~15: Reserved			
F02.18	Encoder P-way filter width	0~63 0 means 0.25us	0~63	2	○
F02.19	Pulses given F filter width	0~63 0 means 0.25us	0~63	2	○
F02.20	Number of pulses in the F-path	0~65535	0~65535	1024	◎
F02.21	Synchronous motor angle compensation enable	0~1	0~1	0	○
F02.22	Speed measurement mode switching frequency point	0~630.00Hz	0~630.00	1.00Hz	○
F02.23	Angle compensation factor	-200.0~200.0	-200.0~200.0	100.0	○
F02.24	Synchronous motor pole initial angle self-learning pole pairs	0~128	0~128	2	◎
Group F03 First motor vector control group					
F03.00	Speed loop proportional gain 1	0~200.0	0~200.0	20.0	○

F03.01	Speed loop integration time 1	0.000~10.000s	0.000~10.000	0.200s	○
F03.02	Switching frequency1	0.00Hz~F03.05	0.00~F03.05	5.00Hz	○
F03.03	Speed loop proportional gain 2	0~200.0	0~200.0	20.0	○
F03.04	Speed loop integration time 2	0.000~10.000s	0.000~10.000	0.200s	○
F03.05	Switching frequency 2	F03.02~ Max frequency (F00.07)	F03.02~F00.07	10.00Hz	○
F03.06	Vector control turndown gain (electric)	50%~200%	50~200	100%	○
F03.07	Vector control differential gain (electric)	50%~200%	50~200	100%	○
F03.08	Speed loop output filtering time	0~8 (corresponding to 0~2^8/10ms)	0~8	0	○
F03.09	Electric torque upper limit setting command selection	0: keyboard set torque upper limit (F03.10) 1: analog quantity AI1 set torque upper limit (100% relative to 3 times motor current) 2: Set the upper limit of torque for analog quantity AI2 (same as above) 3: Reserve 4: Pulse frequency HI1 set the upper limit of torque (same as above) 5: MODBUS communication set torque upper limit (ibid.) 6: PROFIBUS/CANopen communication set torque upper limit (ibid.) 7: Reserve 8: Pulse frequency HI2 set torque (same as above) 9: Profinet communication Settings 10: Reserve 11: reserved	0~11	0	○

F03.10	Electric torque upper limit digital setting	0.0~300.0% (rated current of motor)	0.0~300.0	180.0%	○
F03.11	Braking torque upper limit setting command selection	0: Keyboard set torque upper limit (F03.12) 1: Analog quantity AI1 set torque upper limit (100% relative to 3 times rated motor current) 2: Set the upper limit of torque for analog quantity AI2 (same as above) 3: Reserve 4: Pulse frequency HI1 set the upper limit of torque (same as above) 5: MODBUS communication set torque upper limit (ibid.) 6: PROFIBUS/CANopen communication set torque upper limit (ibid.) 7: Reserve 8: Pulse frequency HI2 set torque (same as above) 9: Profinet communication Settings 10: Reserve 11: Reserved	0~11	0	○
F03.12	Braking torque upper limit digital setting	0.0~300.0% (rated current of motor)	0.0~300.0	180.0%	○
F03.13	Current loop proportional gain	0~65535	0~65535	2000	○
F03.14	Current loop integral gain	0~65535	0~65535	1000	○
F03.15	Synchronous motor weak magnetic control selection	0~1	0~1	0	○
F03.16	Weak magnetic voltage limit (synchronous motor and asynchronous motor vector 0)	0.0~120.0%	0.0~120.0	100.0%	○
F03.17	Weak magnetic	0~8000	0~8000	1000	○

	regulator proportional gain (synchronous motor and asynchronous motor vector 0)				
F03.18	Weak magnetic regulator integration time (synchronous motor and asynchronous motor vector 0)	0~8000	0~8000	1200	○
F03.19	Weak magnetic coefficient	0.1~2.0	0.1~2.0	0.3	○
F03.20	Minimum weak magnetization point (asynchronous motor vector 1)	10%~100%	10~100	20%	○
F03.21	Vector control speed display selection	0: Displays the actual value 1: Displays the value as set	0~1	0	○
F03.22	Static friction compensation coefficient	0.0~100.0%	0.0~100.0	0.0%	○
F03.23	Static friction corresponding frequency point	0.50~ F03.25	0.50~ F03.25	1.00Hz	○
F03.24	High-speed friction compensation coefficient	0.0~100.0%	0.0~100.0	0.0%	○
F03.25	High-speed friction torque corresponding frequency	F03.23~ Max Frequency (F00.07)	F03.23~ Max Frequency (F00.07)	50.00Hz	○
F03.26	Inertia compensation enable	0: disables the function 1: enables the function	0~1	0	○

F03.27	Inertia compensation torque upper limit	0.0~150.0% (rated torque of motor)	0~150.0%	10.0%	○
F03.28	Number of inertia compensation filtering	0~10	0~10	7	○
F03.29	Inertia recognition torque value	0.0~100.0% (rated torque of motor)	0~100.0%	10.0%	○
F03.30	Motor inertia self-learning	0: None Operation 1: start learning	0~1	0	◎
F03.31	Speed control mode optimization selection	The value ranges from 0x0000 to 0x1111 Bits: torque instruction selection 0: The torque is set 1: Torque current is set Tens place: reserved 0: reserved 1: Reserve Hundreds place: velocity ring integral separation enabled 0: disables the function 1: enables the function Thousand place: reserved 0: reserved 1: Reserve	0x0000~0x1111	0x0000	○
F03.32	Speed loop differential gain	0.00~10.00s	0.00~10.00	0.00s	○
F03.33	High-frequency current loop proportional coefficient	0~65535	0~65535	1000	○
F03.34	High frequency current loop integration coefficient	0~65535	0~65535	1000	○
F03.35	Current loop high frequency switching point	0.0~100.0%（F00.07）	0~100.0%	100.0%	○
F03.36	Synchronous motor injection current drop rate	0.0%~100.0% rated motor current	0.0%~100.0%	80.0%	○

F03.37	Synchronous motor injection current 1	0.0%~100.0% rated motor current	-100.0%~100.0%	20.0%	○
F03.38	Synchronous motor injection current 2	0.0%~100.0% rated motor current	-100.0%~100.0%	10.0%	○
F03.39	Synchronous motor injection current switching frequency	0.00Hz to Maximum frequency (F00.07)	0.00Hz~F00.07	10.00 Hz	○
F03.40	Out of tune detection time	0.0~10.0s	0.0~10.0	0.5s	○
F03.41	Synchronous motor high frequency compensation coefficient	0.0~100.0%	0~100.0%	0.0	○
F03.42	Self-learning current loop scaling factor	0~65535	0~65535	0	○
F03.43	Self-learning current loop integration factor	0~65535	0~65535	0	○
Group F04 The first motor V/F control parameter group					
F04.00	V/F curve setting	0: Line V/F 1: multipoint V/F 2:1. Third power reduction of torque V/F 3:1.7 power reduction of torque V/F 4:2. Power reduction of torque V/F 5: V/F separation	0~5	0	◎
F04.01	Torque lift	0.0%~10.0% (rated voltage of motor 1)	0.0~10.0	1.0%	○
F04.02	Torque lift cut-off	0.0%~50.0% (rated frequency of motor 1)	0.0~50.0	20.0%	○
F04.03	V over F frequency point 1	0.00Hz~F04.05	0.00~F04.05	0.00Hz	○
F04.04	V/F voltage point 1	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F04.05	V over F frequency point 2	F04.03~ F04.07	F04.03~ F04.07	0.00Hz	○

F04.06	V over F voltage point 2	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	0.0%	○
F04.07	V over F frequency point 3	F04.05~ F04.09	F04.05~ F04.09	0.00Hz	○
F04.08	V/F voltage at point 3	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F04.09	V over F frequency point 4	F04.07~ F01.04 (rated frequency of induction motor 1) Or F04.05~ F01.18 (rated frequency of synchronous motor 1)	F04.05~ Rated frequency of motor 1	0.00Hz	○
F04.10	V over F voltage point 4	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F04.11	V/F oscillation suppression gain 1	0~100	0~100	10	○
F04.12	V/F oscillation suppression gain 2	0~100	0~100	10	○
F04.13	V/F cut-off point for suppressing oscillations	0.00Hz to Maximum frequency (F00.07)	0.00Hz~F00.07	30.00 Hz	○
F04.14	V/F slip compensation gain	0.0~200.0%	0.0~200.0	100.0%	○
F04.15	VF separation voltage source selection	0: Keyboard setting voltage (setting by F04.16) 1: AI1 sets voltage 2: AI2 sets voltage 3: Reserve 4: HI1 sets the voltage 5: multi-stage setting voltage (the setting value is determined by the multi-stage speed of F10 group parameters) 6: PID setting voltage 7: Set voltage for MODBUS communication 8: PROFIBUS/CANopen communication setting voltage 9: Reserve 10: HI2 sets the voltage	0~13	0	○

		11: Profinet communication Settings 12: Reserve 13: reserved			
F04.16	VF separation voltage is set digitally	0.0%~100.0%	0.0~100.0	100.0%	○
F04.17	VF separation voltage acceleration time	0.0~3600.0s	0.0~3600.0	5.0s	○
F04.18	VF separation voltage deceleration time	0.0~3600.0s	0.0~3600.0	5.0s	○
F04.19	VF separates the maximum output voltage	F04.20~100.0% (rated voltage of motor)	F04.20~100.0	100.0%	◎
F04.20	VF separates the minimum output voltage	0.0%~ F04.19 (rated voltage of motor)	0.0~ F04.19	0.0%	◎
F04.21	Energy-saving choice	0: no action is taken 1: Automatic energy saving	0~1	0	◎
F04.22	Weak magnetic coefficient of constant power region	1.00~1.30	1.00~1.30	1.00	○
F04.23	Asynchronous motor 1 Current source mode enable select	0~1	0~1	0	◎
F04.24	Induction motor 1 Current source mode current setting	0.0~200.0% (rated current of motor)	0.0~200.0%	120.0%	○
F04.25	Induction motor 1 Ratio coefficient of current source mode	0~5000	0~5000	350	○
F04.26	Induction motor 1 Current source mode integral	0~5000	0~5000	150	○

	coefficient				
F04.27	Cut out asynchronous motor 1 current source mode mode frequency point	0.00~F04.28	0.00~F04.28	10.00Hz	○
F04.28	Asynchronous motor 1 current source mode voltage recovery frequency point	F04.27~ Max Frequency (F00.07)	F04.27~ Max Frequency (F00.07)	25.00Hz	○
F04.29	Synchronous motor VF pull-in current 1	-100.0%~100.0% (rated current of motor)	-100.0%~100.0%	20.0%	○
F04.30	Synchronous motor VF pull-in current 2	-100.0%~100.0% (rated current of motor)	-100.0%~100.0%	10.0%	○
F04.31	Synchronous motor VF pull-in current frequency switching point	0.00Hz~ Maximum frequency (F00.07)	0.00Hz~F00.07	50.00 Hz	○
F04.32	Synchronous motor VF reactive closed loop	0~3000	0~3000	50	○
F04.33	Proportionality coefficient	0~3000	0~3000	30	○
F04.34	Synchronous motor VF reactive closed loop	0~16000	0~16000	8000	○
Group F05 Torque control parameter group					
F05.00	Torque control is enabled	0: Forbid 1: Enables the function	0~1	0	◎
F05.01	Torque setting selection	0: Keyboard setting torque (F05.02) 1: Keyboard setting torque (F05.02) 2: Analog quantity AI1 set torque (100% relative to 3 times motor current) 3: Analog quantity AI2 set torque (same as above)	0~12	0	○

		4: Reserve 5: Pulse frequency HI1 set torque (same as above) 6: Multi-stage torque setting (same as above) 7: MODBUS communication setting torque (ibid.) 8: PROFIBUS/CANopen communication setting torque (ditto) 9: Reserve 10: Pulse frequency HI2 set torque (same as above) 11: Profinet communication Settings 12: Reserve			
F05.02	Torque digital setting	-300.0%~300.0% (rated current of motor)	-300.0~300.0	20.0%	○
F05.03	Torque set filtering time	0.000~10.000s	0.000~10.000 s	0.010s	○
F05.04	Torque control positive upper turn frequency setting source selection	0: Keyboard set maximum frequency (F05.05) 1: Set the upper limit frequency of analog quantity AI1 (100% corresponds to the maximum frequency) 2: Set the upper limit frequency of analog quantity AI2 (same as above) 3: Reserve 4: Pulse frequency HI1 Set the upper limit frequency (same as above) 5: Setting the upper limit frequency in multiple segments (ibid.) 6: Maximum frequency set for MODBUS communication (ibid.) 7: PROFIBUS/CANopen communication set maximum frequency (ibid.) 8: Reserved 9: pulse frequency HI2 Set upper limit frequency (same as above) 10: Profinet communication Settings 11: Reserved 12: Reserved	0~12	0	○

F05.05	Torque control positive upper frequency	0.00Hz~maximum frequency (F00.07)	0.00~F00.07	50.00 Hz	○
F05.06	Torque control inversion upper frequency setting source selection	0: Keypad setting upper limit frequency (F05.05) 1: Analog AI1 sets the upper limit frequency (100% corresponds to the maximum frequency) 2: Analog AI2 set the upper limit frequency (same as above) 3：Reserved 4：Pulse frequency HI1 set upper limit frequency (same as above) 5：Multi-segment setting upper limit frequency (same as above) 6：MODBUS communication setting upper limit frequency (same as above) 7：PROFIBUS/CANopen communication setting upper limit frequency（same as above) 8：Reserved 9：Pulse frequency HI2 set upper limit frequency（same as above) 10：Profinet communication setting 11：Reserved 12：Reserved	0~12	0	○
F05.07	Upper frequency of torque control reversal	0.00 Hz ~ maximum frequency (F00.07)	0.00~F00.07	50.00Hz	○
F05.08	Torque control upper frequency offset value	0.00 Hz~Max Frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F05.09	Torque control upper frequency acceleration and deceleration selection	0: No acceleration and deceleration limit 1: Acceleration and deceleration time 1 2：Acceleration and deceleration time 2 3：Acceleration and deceleration time 3 4：Acceleration and deceleration time 4	0~4	0	○
Group F06 Start-stop control group					

F06.00	Starting method	0: Direct start 1：DC brake first then start 2：RPM tracking and then start 1	0~2	0	◎
F06.01	Starting frequency	0.00~50.00Hz	0.00~50.00	0.50Hz	◎
F06.02	Starting frequency holding time	0.0~50.0s	0.0~50.0	0.0s	◎
F06.03	Starting DC braking current	0.0~100.0%	0.0~100.0	0.0%	◎
F06.04	Start DC braking time	0.00~50.00s	0.00~50.00	0.00s	◎
F06.05	Pre-excitation time	0.000~10.000s	0.000~10.000s	0.300s	○
F06.06	Acceleration and deceleration mode	0: Straight type 1：S-curve type Note: When you select 1, you need to set F06.07, F06.08, F06.09, F06.10 function codes together	0~1	0	◎
F06.07	S-curve start time at acceleration	0.0~50.0s	0.0~50.0s	0.1s	◎
F06.08	S-curve end time at acceleration	0.0~50.0s	0.0~50.0s	0.1s	◎
F06.09	S-curve start time at deceleration	0.0~50.0s	0.0~50.0s	0.1s	◎
F06.10	S-curve end time at deceleration	0.0~50.0s	0.0~50.0s	0.1s	◎
F06.11	Stopping method	0: Slow down and stop 1: Free stop	0~1	0	○
F06.12	Stopping DC braking starting frequency	0.00~maximum frequency (F00.07)	0.00~F00.07	0.00Hz	○
F06.13	Stopping DC braking current	0.0~100.0%	0.0~100.0	0.0%	○
F06.14	Stopping DC braking time	0.0~50.00s	0.0~50.00	0.00s	○
F06.15	Stop DC braking demagnetization	0.00~30.00s	0.00~30.00	0.00s	○

	time				
F06.16	Short-circuit braking current	0.0~150.0% (inverter rated current)	0.0~150.0	0.0%	○
F06.17	Start short-circuit braking holding time	0.00~50.00s	0.0~50.00	0.00s	○
F06.18	Stopping short-circuit braking holding time	0.00~50.00s	0.0~50.00	0.00s	○
F06.19	Magnetic flux braking	0: Ineffective 100~150: The larger the coefficient, the greater the braking strength	0~150	0	○
F06.20	Stopping speed	0.00~maximum frequency (F00.07)	0.00~F00.07	0.50 Hz	◎
F06.21	Stop speed detection mode	0: Speed setting value (only this type of detection in V/F mode) 1: Speed detection value	0~1	0	◎
F06.22	Stop speed detection time	0.00~100.00 s	0.00~100.00s	0.50s	◎
F06.23	Pointing pre-excitation time	0.000~10.000s	0.000~10.000 s	0.000s	○
F06.24	Tap stop DC braking start frequency	0.00~maximum frequency (F00.07)	0.00~F00.07	0.00Hz	○
F06.25	Hibernation entry delay time	0.0~3600.0s	0.0~3600.0s	0.0s	○
Group F07 Control optimization parameter group					
F07.00	PWM Selection	0x0000~0x1121 Bits: PWM mode selection 0: PWM mode 1, three-phase modulation and two-phase modulation 1: PWM mode 2, three-phase modulation Ten bits: PWM low-speed carrier limit 0: Low-speed carrier limiting, carrier limiting mode 1 1: Low-speed carrier limiting, carrier limiting mode 2 2: Low-speed carrier not limited	0x0000~0x1121	0x1101	◎

		Hundred bits: Modulation mode 0：SPWM 1：SVPWM Thousand bits: PWM loading mode selection 0：PWM loading mode 1 (AD interrupt) 1: PWM loading mode 2 (normal loading)			
F07.01	Overmodulation selection	0x00~0x11 Individual bits. 0: Overmodulation is invalid 1: Over modulation is valid Ten bits. 0: light overmodulation 1: deep overmodulation Thousand bits. 0: compensation disabled 1: Enable compensation	0x0000~0x1111	0x1001	◎
F07.02	Open loop 0Hz output	0: No voltage output 1: With voltage output 2: DC braking current output by stop	0~2	0	○
F07.03	Automatic voltage stabilization function	0: Invalid 1: Valid throughout	0~1	1	○
F07.04	Sag control frequency drop rate	0.00~50.00Hz	0.00~50.00	0.00Hz	○
F07.05	Sag control start frequency point	0.00~50.00Hz	0.00~50.00	2.00Hz	○
F07.06	Initial pole detection method	0: Pull-in current 1: High frequency superposition 2: Pulse superposition	0~2	0	◎
F07.07	Initial position high frequency injection frequency	200Hz~1000Hz	200~1000	500Hz	◎
F07.08	High frequency superimposed voltage	0.0~300.0% Motor rated voltage	0.0~300.0%	50.0%	◎
F07.09	Reserved variables			0.0	○

F07.10	Control optimization parameter 1	0~0xFFFF	0~0xFFFF	0	○
F07.11	Phase-locked loop cut-in frequency	0~655.35Hz	0~655.35	2.00Hz	○
F07.12	Angle compensation	0.0~359.9°	0.0~359.9	0.0°	○
F07.13	High-frequency injection current	0.0~300.0% (motor rated current)	0.0~300.0	20.0	◎
F07.14	Under-voltage stall voltage regulator proportionality factor	0~1000	0~1000	100	○
F07.15	Integral coefficient of undervoltage stall voltage regulator	0~1000	0~1000	40	○
F07.16	Under-voltage stall current regulator scaling factor	0~1000	0~1000	25	○
F07.17	Integral coefficient of undervoltage stall current regulator	0~2000	0~2000	150	○
F07.18	Overvoltage stall voltage regulator scaling factor	0~1000	0~1000	150	○
F07.19	Over-voltage stall voltage regulator integral factor	0~1000	0~1000	10	○
F07.20	Overvoltage stall current regulator proportional coefficient	0~1000	0~1000	60	○
F07.21	Over-voltage stall current regulator	0~2000	0~2000	200	○

	integration factor				

F07.22	Current limit selection	0x00~0x21 Digit: current-limiting action selection 0: The current-limiting action is invalid 1: Current limiting action is always valid Ten bits: hardware current limit overload alarm selection 0: Hardware current limit overload alarm is valid 1: Hardware current limit overload alarm is invalid 2: ?	0x00~0x21	01	◎
F07.23	Automatic current limit level	50.0~200.0% (inverter rated current)	50.0~200.0	G machine: 160.0% P-type machine: 120.0%	◎
F07.24	Automatic current limit frequency drop rate	0~50.00	0~50.00	10.00Hz/s	◎
F07.25	Automatic current limiting adjustment proportionality factor	0~65535	0~65535	0	○
F07.26	Automatic current limiting adjustment integral factor	0~65535	0~65535	0	
F07.27	First motor output power correction factor	0.00~3.00	0.00~3.00	1.00	○
F07.28	Second motor output power correction coefficient	0.00~3.00	0.00~3.00	1.00	○
F07.29	Over-voltage point	0.0V~2500.0V	0.0~2500.0	Model Determination	◎
F07.30	Undervoltage	0.0V~2000.0V	0.0~2000.0	Model Determination	◎

	point				
F07.31	Overcurrent point	10.0%~250.0%	10.0~250.0	220.0%	◎
F07.32	Voltage correction factor	10.0%~250.0%	10.0~250.0	100.0%	◎
F07.33	Current correction coefficient	10.0%~250.0%	10.0~250.0	100.0%	◎
F07.34	Self-learning deadband compensation method	0~1	0~1	0	○
F07.35	Deadband compensation correction factor	0~300%	0~300	70%	◎
F07.36	Asynchronous motor vector 1 low frequency no-load current amplification coefficient	80~300%	80~300	120%	○
F07.37	Vector control output torque calculation method selection	0~1 0: Torque according to torque current 1: Calculate torque according to power	0~1	0	○
F07.38	VF control flag	0x00~0x11 Individual bits: oscillation rejection coefficient processing 0: Synchronous motor oscillation rejection coefficient associated with the carrier frequency 1: Asynchronous motor oscillation suppression coefficient associated with the carrier frequency and the given frequency Ten bits: external reactive current oscillation suppression amount 0: External reactive current oscillation suppression amount is non-zero 1: External reactive current oscillation suppression amount is 0	0x00~0x11	10	◎
F07.39	Keyboard digital control setting	0x0000~0x1223 Bit: Frequency enable selection 0: both the speaker and the digital potentiometer are valid	0x0000~0x1223	0003	○

		1：only the Bluetooth key is valid 2: only the digital potentiometer adjustment is valid 3: both the Bluetooth key and the digital potentiometer are invalid The tenth position: frequency control selection 0: only valid for F00.03=0 or F00.04=0 setting 1：All frequency modes are valid 2：Multi-segment speed priority is not valid for multi-segment speed Hundred digits: Action selection at stop 0：Valid for setting 1：Valid during operation, cleared after shutdown 2: valid during operation, cleared after receiving stop command Thousands of bits: the long-long key and digital potentiometer integration enable 0: integral function is valid 1: integral function is invalid			
F07.40	Keypad digital control integration rate	0.01~10.00s	0.01~10.00	0.10s	○
F07.41	Reserved variables	0~65535	0~65535	0	●
F07.42	Reserved variable	0~65535	0~65535	0	●
F07.43					
F07.44	Input voltage correction factor	10.0%~250.0%	10.0~250.0	100.0%	◎
Group F08 Input terminal group					
F08.00	DI1 terminal function selection	0: No function 1：Forward running	0~79	7	◎

F08.01	DI2 terminal function selection	2：Reverse rotation operation 3：Three-wire control mode 4： Forward rotation inching 5： Reverse rotation 6： Free stop 7： Fault reset 8： Operation pause 9: External fault input 10：Frequency setting increment (UP) 11：Frequency setting decrement (DOWN) 12: Frequency setting increment/decrement clear 13：Main setting and auxiliary setting switch 14: Combination setting and main setting switching 15: Combination setting and auxiliary setting switching 16：Multi-segment speed terminal 1 17：Multi-segment speed terminal 2 18: Multi-speed terminal 3 19: Multi-speed terminal 4 20：Multi-segment speed pause 21：Acceleration and deceleration time selection 1 22：Acceleration and deceleration time selection 2 23：Simple PLC stop reset 24：Simple PLC pause 25：PID control pause 26：Pendulum frequency pause 27：Pendulum frequency reset	0~79	1	◎

F08.02	DI3 terminal function selection	28：Counter reset 29：Speed and torque control switch 30：Acceleration and deceleration disable 31：Counter trigger 32：Hold 33：Frequency increase/decrease setting temporarily cleared 34：DC brake 35：Motor 1 switch motor 2 36：Command switch to keyboard 37：Command switch to terminal 38：Command switch to communication 39：Pre-excitation command 40：Clear power consumption 41：Power consumption hold 42：Torque upper limit setting source switch to keyboard setting 43：Position reference point input (valid only for S1,S2,S3) 44：Spindle orientation disable 45：Spindle return to zero / local positioning return to zero 46：Spindle zero position selection 1 47：Spindle zero position selection 2 48：Spindle indexing selection 1 49：Spindle indexing selection 2 50：Spindle indexing selection 3 51：Switching terminal for position control and speed control 52：Pulse input disable 53：Position deviation clear 54：Proportional position gain switching 55：Digital position positioning cycle positioning enable 56：Emergency stop 57：Motor over-temperature fault input 58：Rigid tapping enable 59：Switch to V/F control 60：Switching to FVC control 61：PID polarity switching 62：Reserve 63: Servo enable 64：Forward limit limit 65：Reverse limit limit	0~79	0	◎
F08.03	DI4 terminal function selection		0~79	0	◎

		66：Encoder count clear 67：Pulse increment 68：Pulse superposition enable 69：Pulse decrement 70：Electronic gear selection 71~79：Reserve			
F08.04	DI5 terminal function selection		0~79	0	◎
F08.05	DI6 terminal function selection		0~79	0	◎
F08.06	HI input type selection	0x00~0x11 The ones bit: HI1 Indicates the input type 0: high-speed pulse input 1: switch input Tens place: HI2 input type selection 0: high-speed pulse input 1: switch input	0x00~0x11	0	◎
F08.07	Input terminal filter time	0.000~1.000s	0.000~1.000	0.010s	○
F08.08	Terminal command mode	0: two-wire control 1 1: two-wire control 2 2: three-wire control 1 3: three-wire control 2	0~3	0	◎
F08.09	UP/DOWN terminal control setting	0x000~0x221 One bit: frequency control selection 0: The UP/DOWN terminal Settings are valid 1: The UP/DOWN terminal is invalid Tens place: frequency control selection 0: This parameter is valid only for F00.03=0 or F00.04=0 1: All frequency modes are valid 2: When the multi-terminal speed is preferred, the multi-terminal speed is invalid Hundred position: action selection during shutdown 0: The setting is valid 1: valid during operation, clear after	0x000~0x221	0x000	○

		shutdown 2: valid in operation and cleared after receiving stop command			
F08.10	UP terminal frequency incremental integration rate	0.01~50.00Hz/s	0.01~50.00	0.50Hz/s	○
F08.11	DOWN terminal frequency integration rate	0.01~50.00Hz/s	0.01~50.00	0.50Hz/s	○
F08.12	Virtual terminal setting	0x000 to 0x3F (0: Disable, 1: enable) BIT0: DI1 virtual terminal BIT1: DI2 virtual terminal BIT2: DI3 virtual terminal BIT3: DI4 virtual terminal BIT4: HI1 virtual terminal BIT5: HI2 virtual terminal	0x000~0x3F	0x00	◎
F08.13	Reserved	0~65535	0~65535	0	●
F08.14	DI1 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.15	DI1 terminal off delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.16	DI2 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.17	DI2 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.18	DI3 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.19	DI3 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.20	DI4 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.21	DI4 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.22	DI5 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.23	DI5 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○

F08.24	DI6 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.25	DI6 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F08.26	Input terminal active polarity selection	0x000~0x3F This function code sets the polarity of the input terminal. When the bit is set to 0, the input terminal is positive. When the bit is set to 1, the input terminal is of negative polarity. BIT0: DI1 terminal BIT1: DI2 terminal BIT2: DI3 terminal BIT3: DI4 terminal BIT4: DI5 terminal BIT5: DI6 terminal	0x000~0x3F	0x000	○
F08.27	AI1 minimum input	0.00V~F08.29	0.00~F08.29	0.00V	○
F08.28	AI1 minimum input corresponding setting	-100.0%~100.0%	-300.0~300.0	0.0%	○
F08.29	AI1 maximum input	F08.27~10.00V	F08.27~10.00	10.00V	○
F08.30	AI1 maximum input corresponding setting	-300.0%~300.0%	-300.0~300.0	100.0%	○
F08.31	AI1 input filtering time	0.000s~10.000s	0.000~10.000	0.030s	○
F08.32	AI2 minimum input value	0.00V~ F08.38	0.00~F08.38	0.00V	○
F08.33	AI2 minimum input corresponds to the setting	-300.0%~300.0%	-300.0~300.0	0.0%	○
F08.34	AI2 intermediate value 1	F08.32~F08.36	F08.32~F08.36	0.00V	○
F08.35	AI2 intermediate	-300.0%~300.0%	-300.0~300.0	0.0%	○

	value 1 corresponds to the setting				
F08.36	AI2 Intermediate value 2	F08.34~F08.38	F08.34~F08.38	0.00V	○
F08.37	AI2 intermediate value 2 corresponds to the setting	-300.0%~300.0%	-300.0~300.0	0.0%	○
F08.38	AI2 maximum input	F08.32~10.00V	F08.32~10.00	10.00V	○
F08.39	AI2 maximum input corresponds to the setting	-300.0%~300.0%	-300.0~300.0	100.0%	○
F08.40	AI2 input filtering time	0.000s~10.000s	0.000~10.000	0.030s	○
F08.41	HI1 High-speed pulse input function selection	0: frequency setting input 1: Reserve 2: encoder input, which must be used with HI2	0~2	0	◎
F08.42	HI1 minimum input frequency	0.000 KHz ~ F08.44	0.000 KHz ~F08.44	0.000KHz	○
F08.43	HI1 minimum input frequency setting	-300.0%~300.0%	-300.0~300.0	0.0%	○
F08.44	HI1 maximum input frequency	F08.42 ~50.000KHz	F08.42~50.000KHz	50.000KHz	○
F08.45	HI1 maximum input frequency setting	-300.0%~300.0%	-300.0~300.0	100.0%	○
F08.46	HI1 Frequency input filtering time	0.000s~10.000s	0.000~10.000	0.030s	○
F08.47	HI2 high-speed pulse input function selection	0: Frequency setting input 1: Reserve 2: Encoder input, which must be used with HI1	0~2	0	◎
F08.48	HI2 minimum input frequency	0.000 KHz ~ F08.50	0.000 KHz ~F08.47	0.000KHz	○

F08.49	HI2 minimum input frequency setting	-300.0%~300.0%	-300.0~300.0	0.0%	○
F08.50	HI2 maximum input frequency	F08.48 ~50.000KHz	F08.48~50.000KHz	50.000KHz	○
F08.51	HI2 maximum input frequency setting	-300.0%~300.0%	-300.0~300.0	100.0%	○
F08.52	HI2 frequency input filtering time	0.000s~10.000s	0.000~10.000	0.030s	○
F08.53	AI1 input signal type selection	0~1 0: voltage type 1: Current type	0~1	0	◎
Group F09 Output terminal group					
F09.00	HO output mode selection	0: High speed pulse output (open collector) 1: Switching quantity output (open collector)	0~1	0	◎
F09.01	DO output function selection	0: invalid 1: running 2: The system is running 3: Reverse running	0~63	0	○
F09.02	HO output function selection		0~63	0	○

F09.03	T1 output selection	4: Click operation 5: The frequency converter is faulty 6: Frequency level detection FDT1 7: Frequency level detection FDT2 8: Frequency arrives 9: Zero speed running 10: The upper frequency reaches 11: The lower frequency reaches 12: Ready for operation 13: pre-excitation 14: overload alarm 15: underload warning 16: simple PLC stage completed 17: simple PLC cycle completed 18: Set the value to arrive 19: indicates that the specified value is reached 20: The external fault is valid 21: Reserve 22: The running time is up 23: Output the MODBUS communication virtual terminal 24: PROFIBUS/CANopen communication virtual terminal output 25: Reserved 26: DC bus voltage establishment is complete	0~63	1	○
F09.04	T2 output selection	27: z pulse output 28: Pulse stack in progress 29: STO action 30: Positioning is complete 31: spindle return to zero completed 32: Spindle indexing completed 33: Speed limit medium 34: Profinet communication virtual terminal output 35: Reserved 36: Speed/position control switch completed 37 to 40: Reserved 41: C_Y1 from CODESYS (P27.00 needs to be set to 1) 42: C_Y2 from CODESYS (P27.00 needs to be set to 1)	0~63	5	○

		43: C_HDO from CODESYS (P27.00 needs to be set to 1) 44: C_R01 from CODESYS (P27.00 needs to be set to 1) 45: C_RO2 from CODESYS (P27.00 needs to be set to 1) 46: C_RO3 from CODESYS (P27.00 needs to be set to 1) 47: C_RO4 from CODESYS (P27.00 needs to be set to 1) 48 to 63: Reserved			
F09.05	AO1 output selection	0: running frequency 1: Set the frequency 2: slope given frequency 3: running speed 4: Output current (relative to frequency converter) 5: Output current (relative to the motor) 6: Output voltage 7: output power 8: Set the torque value 9: output torque 10: simulates the AI1 input value 11: simulates the AI2 input value 12: Reserve 13: Input value of high speed pulse HI1 14: MODBUS communication setting 1	0~47	0	○
F09.06	AO2 output selection		0~47	0	○

F09.07	HO high frequency pulse output selection	15: MODBUS communication setting 2 16: PROFIBUS/CANopen communication set value 1 17: PROFIBUS/CANopen communication set 2 18: Reserve 19: Reserved 20: Input value of high-speed pulse HI2 21: Profinet communication set value 1 22: Torque current (bipolar, 100% corresponding to 10V) 23: excitation current (100% corresponding to 10V) 24: Set frequency (bipolar) 25: Slope given frequency (bipolar) 26: Running speed (bipolar) 27: Profinet communication set value 2 28: C_AO1 from CODESYS (P27.00 needs to be set to 1) 29: C_AO2 from CODESYS (P27.00 needs to be set to 1) 30: running speed 31 to 47: Reserved	0~47	0	○
F09.08	HO output minimum	-300.0%~F09.10	-300.0~F09.10	0.0%	○
F09.09	The minimum value corresponds to the HO output	0.00~50.00kHz	0.00~50.00	0.00kHz	○
F09.10	HO output maximum	F09.08~100.0%	F09.08~100.0	100.0%	○
F09.11	The maximum value corresponds to the HO output	0.00~50.00kHz	0.00~50.00	50.00kHz	○
F09.12	HO Output filtering time	0.000s~10.000s	0.000~10.000	0.000s	○
F09.13	AO1 Output minimum	-300.0%~F09.15	-300.0~F09.15	0.0%	○
F09.14	The minimum corresponds to	0.00V~10.00V	0.00~10.00	0.00V	○

	the AO1 output				
F09.15	AO1 Maximum output value	F09.13~300.0%	F09.13~300.0	100.0%	○
F09.16	The maximum value corresponds to AO1 output	0.00V~10.00V	0.00~10.00	10.00V	○
F09.17	AO1 Output filtering time	0.000s~10.000s	0.000~10.000	0.000s	○
F09.18	AO2 Lower output limit	-300.0%~F09.20	-300.0~F09.20	0.0%	○
F09.19	Lower bound corresponds to AO2 output	0.00V~10.00V	0.00~10.00	0.00V	○
F09.20	AO2 Upper limit of output	F09.18~300.0%	F09.18~300.0	100.0%	○
F09.21	The upper limit corresponds to the AO2 output	0.00V~10.00V	0.00~10.00	10.00V	○
F09.22	AO2 output filtering time	0.000s~10.000s	0.000~10.000	0.000s	○
F09.23	DO effective delay time	0.000~50.000s	0.000~50.000	0.000s	○
F09.24	DO invalid delay time	0.000~50.000s	0.000~50.000	0.000s	○
F09.25	HO Effective delay time	0.000~50.000s (valid only for F09.00=1)	0.000~50.000	0.000s	○
F09.26	HO Invalid delay time	0.000~50.000s (valid only for F09.00=1)	0.000~50.000	0.000s	○
F09.27	T1 Effective delay time	0.000~50.000s	0.000~50.000	0.000s	○
F09.28	T1 Invalid delay time	0.000~50.000s	0.000~50.000	0.000s	○
F09.29	T2 effective delay time	0.000~50.000s	0.000~50.000	0.000s	○
F09.30	T2 invalid delay time	0.000~50.000s	0.000~50.000	0.000s	○

F09.31	Output terminal positive/negative logic selection	0x00~0x0F This function sets the polarity of the output terminal. When the bit is set to 0, the output terminal is positive. When the bit is set to 1, the output terminal is of negative polarity. BIT0：DO BIT1：HO BIT2：T1 BIT3：T2	0x00~0x0F	00	○
F09.32	Reserved variable	0~65535	0~65535	0	●
F09.33	The frequency reaches the detected value	0.00~ Maximum frequency (F00.07)	0~F00.07	1.00	○
F09.34	Frequency reaches detection time	0.0 ~ 3600.0 s	0~3600.0s	0.5s	○
Group F10 Auxiliary function group					
F10.00	Dot operation frequency	0.00~ Maximum frequency (F00.07)	0.00~F00.07	5.00Hz	○
F10.01	Point acceleration time	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.02	Point deceleration time	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.03	Acceleration time 2	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.04	Deceleration time 2	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.05	Acceleration time 3	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.06	Deceleration time 3	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.07	Acceleration time 4	0.0~3600.0s	0.0~3600.0	Model Determination	○

F10.08	Deceleration time 4	0.0~3600.0s	0.0~3600.0	Model Determination	○
F10.09	Jump frequency 1	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.10	Jump frequency amplitude 1	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.11	Jump frequency 2	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.12	Jump frequency amplitude 2	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.13	Jump frequency 3	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.14	Jump frequency amplitude 3	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	0.00Hz	○
F10.15	Swing amplitude	0.0~100.0% (relative set frequency)	0.0~100.0	0.0%	○
F10.16	Jump frequency amplitude	0.0~50.0% (relative swing frequency amplitude)	0.0~50.0	0.0%	○
F10.17	Swing frequency rise time	0.1~3600.0s	0.1~3600.0	5.0s	○
F10.18	Pendulum frequency decline time	0.1~3600.0s	0.1~3600.0	5.0s	○
F10.19	Reversible dead zone time	0.0~3600.0s	0.0~3600.0	0.0s	○
F10.20	Reverse switch mode	0: zero frequency switchover 1: over-starting frequency switch 2: switch after stopping speed and delay	0~2	1	◎
F10.21	Set running time	0~65535min	0~65535	0min	○
F10.22	Power-on terminal running protection Select	0: The terminal command is invalid during power-on 1: Terminal commands are valid during power-on	0~1	0	○
F10.23	FDT1 level detection value	0.00~ Maximum frequency (F00.07)	0.00~ F00.07	50.00Hz	○
F10.24	FDT1 lag detection value	0.0~100.0% (FDT1 level)	0.0~100.0	5.0%	○
F10.25	FDT2 level detection value	0.00 to F00.07(maximum frequency)	0.00~F00.07	50.00Hz	○
F10.26	FDT2 lag	0.0~100.0% (FDT2 level)	0.0~100.0	5.0%	○

	detection value				
F10.27	The frequency reaches the check out value	0.0~ Max frequency (F00.07)	0.0~F00.07	0.00Hz	○
F10.28	Acceleration and deceleration time switching frequency	0.00~ Maximum frequency (F00.07) 0.00Hz: do not switch Other values: greater than F10.28 Switch to acceleration and deceleration time 2	0.00~F00.07	0.00Hz	○
F10.29	Cooling cooling fan running mode	0: Indicates the normal running mode 1: The fan keeps running after it is powered on	0~1	0	○
F10.30	Operating frequency below the lower limit of frequency (effective when the lower limit of frequency is greater than 0)	0: runs at the lower frequency limit 1: Shut down 2: hibernates	0~2	0	◎
F10.31	Hibernation recovery delay time	0.0~3600.0s(2 valid for F10.30)	0.0~3600.0	0.0s	○
F10.32	Power failure restart selection	0: Restart is prohibited 1: Restart is allowed	0~1	0	○
F10.33	Blackout restart waiting time	0.0 to 3600.0s(1 valid for F10.32)	0.0~3600.0	1.0s	○
F10.34	Starting delay time	0.0~600.0s	0.0~600.0	0.0s	○
F10.35	Stop speed delay time	0.0~600.0s	0.0~600.0	0.0s	○
F10.36	Emergency stop deceleration time	0.0~60.0s	0.0~60.0	2.0s	○
F10.37	Reserved variable	0~65535	0~65535	0	●
F10.38	Motor 1 and motor 2 switch channel selection	0x00~0x14 LED bits: Switch channel selection 0: terminal switchover 1: indicates MODBUS communication switchover	0x00~0x14	0x00	◎

		2: PROFIBUS/CANopen communication set torque upper limit (ibid.) 3: Reserve 4: Profinet communication Settings LED tens: switch enable selection in operation 0: cannot be switched during running 1: can be switched during operation			
F10.39	The initial power consumption is high	0~59999°（k）	0~59999	0°	○
F10.40	Low initial power consumption	0.0~999.9°	0~999.9	0.0°	○
F10.41	Inverter input power factor	0.00~1.00	0.00~1.00	0.56	○
F10.42	STO lock selection	0: The STO alarm is locked An alert lock means that when a STO appears, the status returns and must be reset. 1: The STO alarm is not locked Alarm non-lock means that when a STO appears, the STO alarm will automatically disappear after the status is restored.	0~1	0	○
F10.43	Number of decimal points for linear velocity	0~3	0~3	0	○
F10.44	Set value	F10.45~65535	F10.45~65535	0	○
F10.45	Specified value	0~F10.44	0~F10.44	0	○
Group F11 PID control group					
F11.00	PID given source	0: keypad set number given (F11.01) 1: Analog channel AI1 is set 2: Set analog channel AI2 3: Reserve 4: High speed pulse HI1 setting 5: Multiple segments are given 6: MODBUS communication Settings 7: PROFIBUS/CANopen communication	0~12	0	○

		Settings 8: reserve 9: High speed pulse HI2 setting 10: Profinet communication Settings 11: reserved 12: Reserve			
F11.01	PID value setting	-100.0%~100.0%	-100.0~100.0	0.0%	○
F11.02	PID feedback source	0: simulates channel AI1 feedback 1: simulates channel AI2 feedback 2: Reserve 3: high-speed pulse HI2 feedback 4: MODBUS communication feedback 5: PROFIBUS/CANopen communication Settings 6: Reserve 7: High speed pulse HI2 feedback 8: Profinet communication Settings 9: Reserve 10: Reserve	0~10	0	○
F11.03	PID positive and negative action	0: indicates a positive effect 1: Reaction	0~1	0	○
F11.04	Proportional gain	0.00~100.00	0.00~100.00	1.80	○
F11.05	Integration time	0.00~10.00s	0.00~10.00	0.90s	○
F11.06	Differential time	0.00~10.00s	0.00~10.00	0.00s	○
F11.07	Sampling period	0.001~10.000s	0.001~10.000	0.001s	○
F11.08	PID deviation limit	0.0~100.0%	0.0~100.0	0.0%	○
F11.09	PID output upper limit	F11.10~100.0% (maximum frequency or voltage)	F11.10~100.0	100.0%	○
F11.10	PID output lower limit	-100.0%~F11.09 (maximum frequency or voltage)	-100.0~F11.09	0.0%	○
F11.11	PID feedback line break detection value	0.0~100.0%	0.0~100.0%	0.0%	○
F11.12	PID feedback break detection time	0.0~3600.0s	0.0~3600.0	1.0s	○
F11.13	PID control	0x0000~0x1111	0x0000~0x11	0x0001	○

	selection	The ones place: 0: The frequency reaches the upper and lower limits to continue integral adjustment 1: frequency reaches the upper and lower limits to stop integral regulation Ten's place: 0: consistent with the main given direction 1: can be opposite to the main given direction The hundred place: 0: Maximum frequency limit 1: Limit the amplitude according to the master frequency Thousands: 0: primary + secondary frequency, primary frequency source buffer acceleration and deceleration is invalid 1: main + auxiliary frequency, main frequency source buffer acceleration and deceleration Effective. Acceleration and deceleration are determined by F11.07 acceleration time 4	11		
F11.14	Low-frequency proportional gain (Kp)	0.00 ~ 100.00 Low frequency switching point: 5.00Hz; high frequency switching point: 10.00Hz(F11.04 corresponds to the high frequency parameter), and linear interpolation between them	0.00~100.00	1.00	○
F11.15	PID instruction acceleration and deceleration time	0.0~1000.0s	0.0~1000.0s	0.0s	○
F11.16	PID output filtering time	0.000~10.000s	0.000~10.000s	0.000s	○
F11.17	Reserved variable	-100.0~100.0%	-100.0~100.0%	0.0%	○
F11.18	Low frequency integration time	0.00~10.00s	0.00~10.00s	0.90s	○
F11.19	Low frequency	0.00~10.00s	0.00~10.00s	0.00s	○

	differential time				
F11.20	PID parameter switches the low frequency point	0.00~F11.21	0.00~F11.21	5.00	○
F11.21	PID parameter switches high frequency points	F11.20~F00.08	F11.20~F00.08	10.00	○
Group F12 Multi - stage speed and simple PLC group					
F12.00	Multi-segment speed zero	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.01	Multiple speed one	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.02	Multiple speed two	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.03	Multiple speed three	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.04	Multiple speed four	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.05	Multiple speed 5	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.06	Multiple speed 6	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.07	Multiple speed 7	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.08	Multiple speed 8	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.09	Multiple speed 9	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.10	Multiple speed 10	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.11	Multiple speed 11	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.12	Multiple speed 12	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.13	Multiple speed 13	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.14	Multiple speed 14	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.15	Multiple speed 15	-100.0~100.0%	-100.0~100.0	0.0%	○
F12.16	Simple PLC mode	0: stops after running once 1: Run once and keep the final value running 2: Cycle running	0~2	0	○

F12.17	Easy PLC memory selection	0: Power failure does not memory 1: power failure memory	0~1	0	○
F12.18	Segment 0 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.19	First run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.20	Segment 2 run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.21	Segment 3 run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.22	Segment 4 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.23	Segment 5 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.24	Segment 6 run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.25	Section 7 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.26	Section 8 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.27	Segment 9 run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.28	Section 10 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.29	Segment 11 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.30	Segment 12 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.31	Section 13 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.32	Section 14 running time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○
F12.33	Segment 15 run time	0.0~6553.5s(min)	0.0~6553.5	0.0 s(min)	○

<table>
<tr><td>F12.34</td><td>Simple PLC section 0~7 acceleration and deceleration time selection</td><td colspan="3">The details are described in the following table
<table><tr><th>Function code</th><th colspan="2">Binary bit</th><th>Number of segments</th><th>Acceleration and deceleration time 1</th><th>Acceleration and deceleration time 2</th><th>Acceleration time 3</th><th></th></tr><tr><td rowspan="8">F12.34</td><td>Bit1</td><td>Bit0</td><td>0</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit3</td><td>Bit2</td><td>1</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit5</td><td>Bit4</td><td>2</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit7</td><td>Bit6</td><td>3</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit9</td><td>Bit8</td><td>4</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit11</td><td>Bit10</td><td>5</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit13</td><td>Bit12</td><td>6</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit15</td><td>Bit14</td><td>7</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td rowspan="8">F12.35</td><td>Bit1</td><td>Bit0</td><td>8</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit3</td><td>Bit2</td><td>9</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit5</td><td>Bit4</td><td>10</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit7</td><td>Bit6</td><td>11</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit9</td><td>Bit8</td><td>12</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit11</td><td>Bit10</td><td>13</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit13</td><td>Bit12</td><td>14</td><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>Bit15</td><td>Bit14</td><td>15</td><td>00</td><td>01</td><td>10</td><td>11</td></tr></table></td><td>0x0000</td><td>○</td></tr>
<tr><td>F12.35</td><td>Simple PLC 8~15 section of acceleration and deceleration time selection</td><td colspan="3">After the user selects the acceleration and deceleration time of the corresponding segment, the combined 16-bit binary number is converted into a hexadecimal number, and the corresponding function code can be set.
Acceleration and deceleration time 1 is set by F00.13 and F00.14, acceleration and deceleration time 2 is set by F10.03 and F10.04, acceleration and deceleration time 3 is set by F10.05 and F10.06, acceleration and deceleration time 4 is set by F10.07 and F10.08.
The value ranges from 0x0000 to 0xFFFF</td><td>0x0000</td><td>○</td></tr>
<tr><td>F12.36</td><td>Simple PLC operation mode selection</td><td>0: Restart from the first paragraph
1: Continue running from the stage frequency at the moment of interruption</td><td>0~1</td><td>0</td><td>◎</td></tr>
<tr><td>F12.37</td><td>Simple PLC time</td><td>0: s</td><td>0~1</td><td>0</td><td>◎</td></tr>
</table>

	unit	1: minutes			
Group F13 Fault and protected group					
F13.00	First motor overload protection option	0: not protected 1: ordinary motor (with low speed compensation) 2: frequency conversion motor (without low speed compensation)	0~2	2	◎
F13.01	First motor overload protection gain	20.0%~150.0%	20.0~150.0	100.0%	○
F13.02	Second motor overload protection option	0: not protected 1: ordinary motor (with low speed compensation) 2: frequency conversion motor (without low speed compensation)	0~2	2	◎
F13.03	Second motor overload protection gain	20.0%~150.0%	20.0~150.0	100.0%	○
F13.04	Overvoltage stall protection	0: Forbid 1: Allow	0~1	1	○
F13.05	Overvoltage stall protection voltage	120~145% (standard bus voltage) (380V)	120~145%	136%	○
		120~145% (standard bus voltage) (220V)	120~145%	120%	
F13.06	Energy consumption braking is enabled	0: energy consumption braking is prohibited 1: Energy consumption braking is enabled	0~1	1	○
F13.07	Energy consumption brake threshold voltage	200.0~2000.0V	200.0~2000.0	220V voltage: 380.0V 380V voltage: 700.0V 660V voltage: 1120.0V	○
F13.08	Number of automatic fault resets	0~10	0~10	0	○

F13.09	Set the automatic fault reset interval	0.1~3600.0s	0.1~3600.0	1.0s	○
F13.10	Phase loss protection	0x000~0x111 The ones place: 0: Software input phase protection is disabled 1: Software input phase protection is allowed Ten's place: 0: output phase loss protection is prohibited 1: output phase protection is allowed Hundred place: [Meaning change] 0: hardware input phase loss protection is disabled 1: Hardware input phase protection is allowed The hundred place: 0: The contactor fault protection is disabled 1: The contactor fault protection is allowed Thousands: 0: Fan fault protection is disabled 1: Fan fault protection is allowed	0x0000~0x1111	0x1111	○
F13.11	Current fault type	0: no fault occurs 1: inverter U phase protection 2: inverter V phase protection 3: inverter W phase protection 4: accelerates overcurrent 5: decelerate overcurrent 6: constant overcurrent 7: accelerates overvoltage	0~70		●
F13.12	Type of the previous fault		0~70		●
F13.13	Type of the first two faults		0~70		●
F13.14	Type of the first three faults		0~70		●

F13.15	Type of the first four faults	8: decelerating overvoltage 9: constant speed overvoltage 10: bus undervoltage fault 11: Motor overload 12: Frequency converter is overloaded 13: input side phase loss (unbalanced) 14: output side is out of phase 15: The rectifier module overheats 16: The inverter module is overheated 17: external fault 18:485 Communication failure 19: Current detection fault 20: motor self-learning fault 21: The EEPROM operation is faulty 22: PID feedback disconnected fault 23: The brake unit is faulty 24: indicates that the running time reaches 25: Electronic overload 26: The panel communication is incorrect 27: Parameter upload error 28: parameter download error 29: The Profibus communication is faulty 30: The Ethernet communication is faulty 31: CANopen correspondence 32: short circuit to ground fault 1 33: Short circuit to ground fault 2 34: Speed deviation fault 35: Out-of-control fault 36: underload fault 37: The encoder is disconnected 38: The encoder fails in reverse 39: encoder Z pulse break fault 40: The safety torque stops	0~70		●
F13.16	Type of the first five faults	41: The buffer contactor is faulty 42: The fan contactor is faulty 43: midpoint potential imbalance fault 44: The secondary machine is offline 45: PLC card user-defined fault 1 46: PLC card user-defined fault 2 47: PLC card user-defined fault 3 48: PLC card user-defined fault 4 49: PLC card user-defined fault 5 50: PLC card user-defined fault 6	0~70		●

		51: PLC card user-defined fault 7 52: PLC card custom fault 8 53: PLC card user-defined fault 9 54: PLC card user-defined fault 10 55: indicates that the expansion card type is repeated 56: The encoder UVW is lost 57: TZ is faulty 58: CAN communication times out 59: Motor overtemperature failure 60: card slot 1 Failed to identify the card 61: Failed to identify the card in slot 2 62: Failed to identify card slot 3 63: The communication of the card in slot 1 times out 64: indicates that the communication between the card in slot 2 times out 65: The communication with slot 3 times out 66: EtherCat communication timeout fault 67: Bacnet communication times out 68: DeviceNet communication times out 69: The CAN slave is faulty			
F13.17	Current operating frequency of faults	0.00Hz to Maximum frequency (F00.07)	0.00~F00.07	0.00Hz	●
F13.18	Given frequency for current fault ramp	0.00Hz to Maximum frequency (F00.07)	0.00~F00.07	0.00Hz	●
F13.19	Current fault output voltage	0~1200V	0~1200	0V	●
F13.20	Current fault output current	0.0~6300.0A	0.0~6300.0	0.0A	●
F13.21	Current fault bus voltage	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.22	Current fault median voltage	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.23	Negative voltage in the current fault	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.24	Maximum temperature	-20.0~120.0℃	-20.0~120.0	0.0℃	●

	when the current fault occurs				
F13.25	Current fault input terminal status	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.26	Current fault output terminal status	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.27	Frequency of the previous failure	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●
F13.28	The frequency of the previous failure ramp is given	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●
F13.29	Output voltage of the previous failure	0~1200V	0~1200	0V	●
F13.30	Output current of the first fault	0.0~6300.0A	0.0~6300.0	0.0A	●
F13.31	Bus voltage of the first failure	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.32	Median voltage of the previous failure	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.33	Negative voltage in the previous failure	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.34	Maximum temperature of the previous fault	-20.0~120.0℃	-20.0~120.0	0.0℃	●
F13.35	Enter the terminal status of the previous fault	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.36	Output terminal status of the previous fault	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.37	Operation frequency of the first two failures	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●

F13.38	The first 2 failure slopes are given frequencies	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●
F13.39	The output voltage of the first two failures	0~1200V	0~1200	0V	●
F13.40	Output current of the first two failures	0.0~6300.0A	0.0~6300.0	0.0A	●
F13.41	The bus voltage of the first two failures	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.42	Median voltage of the first two failures	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.43	Negative voltage in the first two failures	0.0~2000.0V	0.0~2000.0	0.0V	●
F13.44	Maximum high temperature during the first two failures	-20.0~120.0℃	-20.0~120.0	0.0℃	●
F13.45	Input terminal status for the first two failures	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.46	Output terminal status of the first two failures	0x0000~0xFFFF	0x0000~0xFFFF	0	●
F13.47	Select the action of the fault output terminal when the fault occurs	0x00~0x11 The ones place: 0: The operation is performed when the undervoltage fault occurs 1: does not operate when the undervoltage fault occurs Ten's place: 0: indicates the action during automatic reset 1: No action during automatic reset	0x00~0x11	0x00	○
F13.48	Select the function of	0: Forbid 1: Allow	0~1	0	○

	instantaneous power failure and frequency reduction				
F13.49	reserve	0~65535	0~65535	0	●
F13.50	Automatic voltage drop frequency selection	0 ~ 1 0: Invalid 1: Effective	0~1	0	○
F13.51	Frequency converter or motor overload warning selection	0x0000~0x1132 The ones place: 0: motor overload and underload warning, relative to the rated current of the motor 1: frequency converter over and under load forecast alarm, relative to the rated current of frequency converter Ten's place: 0: The frequency converter will continue to run after the alarm of over and under load 1: The frequency converter continues to run after underload alarm, and stops running after overload fault 2: The frequency converter continues to run after overload alarm, and stops running after underload fault 3: The frequency converter stops running after reporting an underload fault The hundred place: 0: always detects 1: Detection in constant speed operation Thousands: 0: 1.	0x0000~0x1132	0x0000	○
F13.52	Frequency converter overload	0: disables the function 1: enables the function	0~1	0	◎

	integration enabled				
F13.53	Overload alarm detection level	F13.55~200%	F13.55~200	G型机：150% P型机：120%	○
F13.54	Overload warning time	0.1~3600.0s	0.1~3600.0	1.0s	○
F13.55	Underload warning detection level	0%~F13.53	0~F13.53	50%	○
F13.56	Underload warning detection time	0.1~3600.0s	0.1~3600.0	1.0s	○
F13.57	Velocity deviation detection value	0.0~50.0%	0.0~50.0	10.0%	○
F13.58	Velocity deviation detection time	0.0~10.0s (no speed deviation protection at 0.0)	0.0~10.0	2.0s	○
F13.59	Shutdown energy consumption braking effective choice	0~1	0~1	0	◎
Group F14 ModBus Communication group					
F14.00	ModBus communication baud rate setting	0：1200BPS 1：2400BPS 2：4800BPS 3：9600BPS 4：19200BPS 5：38400BPS 6：57600BPS 7：115200BPS	0~7	4	○
F14.01	Data bit check Settings	0: None checksum (N, 8,1) for RTU 1: Parity check (E, 8,1) for RTU 2: odd check (O, 8,1) for RTU 3: No check (N, 8,2) for RTU 4: Parity check (E, 8,2) for RTU 5: odd check (O, 8,2) for RTU	0~5	1	○
F14.02	Local communication address	1~247	1~247	1	○

F14.03	Communication response delay	0~200ms	0~200	5	○
F14.04	Communication timeout time	0.0 (invalid) to 60.0s	0.0~60.0	0.0s	○
F14.05	Transmission error handling	0: Alarm and free stop 1: Do not alarm and continue running 2: Stop without alarm by stopping mode (only under communication control mode) 3: Stop the machine without alarm (under all control modes)	0~3	0	○
F14.06	Communication processing action selection	0x00~0x11 The ones place: 0: The write operation responded 1: The write operation does not respond Ten's place: 0: Indicates that the communication password protection is invalid 1: The communication password is valid	0x00~0x11	0x00	○
Group F15 Communication expansion card 1 Function group					
F15.00	Expansion card type	0: Profibus_Dp 1: CANOPN 2: Reserve 3: BACnet_MSTP 4: Reserve	0~4	0	●
F15.01	Module address	0~127	0~127	2	◎
F15.02	PZD2 receives	0: invalid 1: Set frequency (0~Fmax (unit: 0.01Hz)) 2: PID set, range (0~ 1000,1000 corresponds to 100.0%) 3: PID feedback, range (0~ 1000,1000 corresponds to 100.0%) 4: torque setting value (-3000~ 3000,1000 corresponds to rated current of 100.0% motor) 5: Upper limit frequency set for positive rotation (0~Fmax (unit: 0.01Hz)) 6: Reverse the upper frequency setting	0~31	0	○
F15.03	PZD3 Receive		0~31	0	○
F15.04	PZD4 Receiving		0~31	0	○
F15.05	PZD5 Receiving		0~31	0	○
F15.06	PZD6 Receiving		0~31	0	○
F15.07	PZD7 Receiving		0~31	0	○
F15.08	PZD8 Receiving		0~31	0	○
F15.09	PZD9 Receiving		0~31	0	○

F15.10	PZD10 Receiving	value (0~Fmax (unit: 0.01Hz)) 7: upper limit of electric torque (0~ 3000,1000 corresponds to 100.0% rated current of motor) 8: upper limit of braking torque (0~ 3000.	0~31	0	○
F15.11	PZD11 Receiving	1000 corresponds to rated current of 100.0% motor) 9: virtual input terminal command. The value ranges from 0x000 to 0x1FF 10: virtual output terminal command. The value ranges from 0x00 to 0x0F 11: voltage set value (special for V/F separation) (0~ 1000,1000 corresponds to 100.0% rated voltage of the motor) 12: AO1 output set value 1 (-1000~1000, 1000 corresponds to 100.0%) 13: Reserve 14: position set high (signed number) 15: position set low (unsigned number) 16: position feedback high (signed number) 17: Position feedback low (unsigned number) 18: Position feedback setting mark (write 1 and then 0, then position feedback can be set) 19: Electronic gear molecule 20: denominator of electronic gear 21 to 31: Reserved	0~31	0	○
F15.12	PZD12 Receive		0~31	0	○
F15.13	PZD2 Send	0: invalid 1: Operating frequency (*100, Hz) 2: Set frequency (*100, Hz)	0~31	0	○
F15.14	PZD3 Send		0~31	0	○

F15.15	PZD4 Send	3: bus voltage (*10, V) 4: output voltage (*1, V) 5: Output current (*10, A) 6: actual value of output torque (*10, %) 7: actual output power value (*10, %) 8: Running speed (*1, RPM) 9: Running line speed (*1, m/s) 10: slope given frequency 11: indicates the fault code 12: AI1 value (*100, V) 13: AI2 value (*100, V) 14: Reserve 15: HI1 frequency plant (*100, kHz)	0~31	0	○
F15.16	PZD5 Send		0~31	0	○
F15.17	PZD6 Send		0~31	0	○
F15.18	PZD7 Sent		0~31	0	○
F15.19	PZD8 Sent		0~31	0	○
F15.20	PZD9 Send		0~31	0	○
F15.21	PZD10 Send		0~31	0	○
F15.22	PZD11 Send		0~31	0	○
F15.23	PZD12 Send	16: indicates terminal input status 17: indicates terminal output status 18: PID given (*100, %) 19: PID feedback (*100, %) 20: rated torque of the motor 21: Position set high (signed number) 22: Position set low (unsigned number) 23: Position feedback high (signed number) 24: Position feedback low (unsigned number) 25: indicates the status word 26: HI2 frequency plant (*100, kHz) 27 to 31: Reserved	0~31	0	○
F15.24	PZD is sent with temporary variable 1	0~65535	0~65535	0	○
F15.25	DP communication timeout time	0.0 (invalid) to 60.0s	0.0~60.0	1.0s	○
F15.26	CANOPEN Communication timeout period	0.0 (invalid) to 60.0s	0.0~60.0	1.0s	○
F15.27	CANopen communication baud rate	0：1000k bps 1：800k bps 2：500k bps 3：250k bps 4：125k bps 5：100k bps	0~7	3	◎

		6：50k bps 7：20k bps			
F15.28	CAN mailing address	0~127	0~127	1	◎
F15.29	CAN select baud rate	0：50Kbps 1：100Kbps 2：125Kbps 3：250Kbps 4：500Kbps 5：1M bps	0~5	4	◎
F15.30	CAN communication timeout period	0.0 (invalid) ~60.000s	0.0~60.000s	0.020s	○
F15.31	DeviceNET communication timeout	0.0 (invalid) to 60.0s	0.0~60.0	1.0s	○
F15.32	Displays the baud rate of the node	0	0	0	●
F15.33	Polling is enabled	0~1	0~1	1	○
F15.34	Polling output instance number	19: INVT inverter output 20: ODVA basic speed control output 21: ODVA expansion speed control output 22: ODVA speed and torque control output 23: ODVA expansion speed and torque control output 24: INVT basic speed control output 25: INVT extends speed control output 26: INVT speed and torque control output 27: INVT expansion speed and torque control output	19~27	19	○
F15.35	Poll the input instance number	69: INVT inverter input 70: ODVA basic speed control input 71: ODVA expansion speed control input 72: ODVA speed and torque control input 73: ODVA expansion speed and torque control input 74: INVT basic speed control input 75: INVT extended speed control input 76: INVT speed and torque control input	69~77	69	○

		77: INVT expansion speed and torque control input			
F15.36	Status change/period is enabled	0~1	0~1	0	○
F15.37	State change/cycle output instance selection	19: INVT inverter output 20: ODVA basic speed control output 21: ODVA expansion speed control output 22: ODVA speed and torque control output 23: ODVA expansion speed and torque control output 24: INVT basic speed control output 25: INVT extends speed control output 26: INVT speed and torque control output 27: INVT expansion speed and torque control output	19~27	19	○
F15.38	State change/period input instance selection	69: INVT inverter input 70: ODVA basic speed control input 71: ODVA expansion speed control input 72: ODVA speed and torque control input 73: ODVA expansion speed and torque control input 74: INVT basic speed control input 75: INVT extended speed control input 76: INVT speed and torque control input 77: INVT expansion speed and torque control input	69~77	69	○
F15.39	Component 19 Output length	8~32	8~32	32	○
F15.40	Component 19 Input length	8~32	8~32	32	○
F15.41	BACnet communication mode selection	0: P16.22 (I_M service) is valid 1: F15.42 (Set BACnet_MSTP baud rate) is valid	0~1	0	◎
F15.42	BACnet_MSTP baud rate	0~5	0~5	0	◎
Group F16 Communication expansion card 2 Function group					

F16.00	Select the expansion card 2 type	0: Reserved 1: "EtherCat" 2: Profinet 3: BACnet_I_M 4: Reserved	0~4	0	●
F16.01	Ethernet communication speed setting	0: adaptive 1:100 m full duplex 2:100 m half duplex 3:10 M full duplex 4:10 M half duplex	0~4	0	◎
F16.02	IP address 1	0~255	0~255	192	◎
F16.03	IP address 2	0~255	0~255	168	◎
F16.04	IP address 3	0~255	0~255	0	◎
F16.05	IP address 4	0~255	0~255	1	◎
F16.06	Subnet mask 1	0~255	0~255	255	◎
F16.07	Subnet mask 2	0~255	0~255	255	◎
F16.08	Subnet mask 3	0~255	0~255	255	◎
F16.09	Subnet mask 4	0~255	0~255	0	◎
F16.10	Gateway 1	0~255	0~255	192	◎
F16.11	Gateway 2	0~255	0~255	168	◎
F16.12	Gateway 3	0~255	0~255	1	◎
F16.13	Gateway 4	0~255	0~255	1	◎
F16.14	Ethernet monitor variable address 1	0~FFFF	0~FFFF	0	○
F16.15	Ethernet monitor variable address 2	0~FFFF	0~FFFF	0	○
F16.16	Ethernet monitor variable address 3	0~FFFF	0~FFFF	0	○
F16.17	Ethernet monitor variable address 4	0~FFFF	0~FFFF	0	○
F16.18	reserve	0~10000ms	0~10000ms	0	○
F16.19	EtherCAT synchronization	0~4（0:250us，1:500us，2:1ms，3:2ms）	0~4	2	○

	period				
F16.20	BACnet Device number high	BACnet device independent coding (0~4194303)	0~4194	0	◎
F16.21	BACnet Indicates the lower number of the device		0~999	1	◎
F16.22	BACnet I-Am Indicates the i-am service	0: sent during power-on 1: keep sending	0~1	0	○
F16.23	BACnet communication timeout period	0.0 (invalid) to 60.0s	0.0~60.0	1.0s	○
F16.24	Card slot 1 Extends the identification time of the card	0.0 ~ 600.0 s If the value is set to 0.0, no fault detection is performed	0.0~600.0	0.0	○
F16.25	Card slot 2 Extends the identification time of the card	0.0 ~ 600.0 s If the value is set to 0.0, no fault detection is performed	0.0~600.0	0.0	○
F16.26	Card slot 3 Extends the identification time of the card	0.0 ~ 600.0 s If the value is set to 0.0, no fault detection is performed	0.0~600.0	0.0	○
F16.27	Card slot 1 Extends the communication timeout period of the card	0.0 ~ 600.0 s If the value is set to 0.0, the offline fault is not detected	0.0~600.0	0.0	○
F16.28	Card slot 2 Extends the communication timeout period of the card	0.0 ~ 600.0 s If the value is set to 0.0, the offline fault is not detected	0.0~600.0	0.0	○
F16.29	Card slot 3 Extends the communication timeout period of the card	0.0 ~ 600.0 s If the value is set to 0.0, the offline fault is not detected	0.0~600.0	0.0	○

F16.30	EtherCat communication timeout period	0.0 (invalid) to 60.0s	0.0~60.0	0.0s	○
F16.31	Profinet communication timeout period	0.0 (invalid) to 60.0s	0.0~60.0	1.0s	○
F16.32	PZD2 receives	0: invalid 1: Set frequency (0~Fmax (unit: 0.01Hz) 2: PID set, range (0~ 1000,1000 corresponds to 100.0%) 3: PID feedback. The value ranges from 0 to 1000. 1000 corresponds to 100.0% 4: torque setting value (-3000~ 3000,1000 corresponds to rated current of 100.0% motor) 5: Upper limit frequency set for positive rotation (0~Fmax (unit: 0.01Hz)) 6: Reverse the upper frequency setting value (0~Fmax (unit: 0.01Hz)) 7: upper limit of electric torque (0~ 3000,1000 corresponds to 100.0% rated current of motor) 8: upper limit of braking torque (0~ 3000. 1000 corresponds to rated current of 100.0% motor) 9: virtual input terminal command. The	0~31	0	○
F16.33	PZD3 Receive		0~31	0	○
F16.34	PZD4 Receiving		0~31	0	○
F16.35	PZD5 Receiving		0~31	0	○
F16.36	PZD6 Receiving		0~31	0	○
F16.37	PZD7 Receiving		0~31	0	○
F16.38	PZD8 Receiving		0~31	0	○
F16.39	PZD9 Receiving		0~31	0	○
F16.40	PZD10 Receiving		0~31	0	○

F16.41	PZD11 Receiving	value ranges from 0x000 to 0x1FF 10: virtual output terminal command. The value ranges from 0x00 to 0x0F 11: voltage set value (special for V/F separation) (0~ 1000,1000 corresponds to 100.0% rated voltage of the motor) 12: AO1 output set value 1 (-1000~1000, 1000 corresponds to 100.0%) 13: AO2 output set value 2 (-1000~ 1000,1000 corresponds to 100.0%) 14: position set high (signed number) 15: position set low (unsigned number) 16: position feedback high (signed number) 17: Position feedback low (unsigned number) 18: Position feedback setting mark (write 1 and then 0, then position feedback can be set) 19: Electronic gear molecule 20: denominator of electronic gear 21 to 31: Reserved	0~31	0	○
F16.42	PZD12 Receive		0~31	0	○
F16.43	PZD2 Send	0: invalid 1: Operating frequency (*100, Hz) 2: Set frequency (*100, Hz) 3: bus voltage (*10, V) 4: output voltage (*1, V) 5: Output current (*10, A) 6: actual value of output torque (*10, %) 7: actual output power value (*10, %) 8: Running speed (*1, RPM) 9: Running line speed (*1, m/s) 10: slope given frequency 11: indicates the fault code	0~31	0	○
F16.44	PZD3 Send		0~31	0	○
F16.45	PZD4 Send		0~31	0	○
F16.46	PZD5 Send		0~31	0	○
F16.47	PZD6 Send		0~31	0	○
F16.48	PZD7 Send		0~31	0	○
F16.49	PZD8 Send		0~31	0	○
F16.50	PZD9 Send		0~31	0	○
F16.51	PZD10 Send		0~31	0	○

F16.52	PZD11 Send	12: AI1 value (*100, V) 13: AI2 value (*100, V) 14: Reserve 15: HI1 frequency plant (*100, kHz) 16: indicates terminal input status 17: indicates terminal output status 18: PID given (*100, %) 19: PID feedback (*100, %) 20: rated torque of the motor 21: Position set high (signed number) 22: Position set low (unsigned number) 23: Position feedback high (signed number) 24: Position feedback low (unsigned number) 25: indicates the status word 26: HI2 frequency plant (*100, kHz) 27 to 31: Reserved	0~31	0	○
F16.53	PZD12 Send		0~31	0	○
Group F17 Keyboard display group					
F17.00	User password	0~65535	0~65535	0	○
F17.01	Parameter initialization	0: no operation is performed 1: restores the factory defaults 2: Clear fault records 3: Keyboard parameters are locked	0~3	0	◎
F17.02	Function parameter copy	0: no operation is performed 1: The parameters are uploaded to the keyboard 2: Download all parameters (including motor parameters) 3: Non-electric unit parameter download 4: Set parameters download	0~4	0	◎
F17.03	QUICK/JOG key function selection	The value ranges from 0x00 to 0x27 One bit: QUICK/JOG key function selection 0: has no function 1: click operation 2: Reserve	0x00~0x27	0x01	◎

		3: positive turn reverse switch 4: Clear the UP/DOWN Settings 5: Free parking 6: Realize the sequential switching of the given mode of running commands 7: Reserve Tens place: reserved			
F17.04	QUICK key control channel switching	0: keyboard control → terminal control → communication control 1: Keyboard control ←→ Terminal control 2: Keyboard control ←→ Communication control 3: Terminal control ←→ Communication control	0~3	0	○
F17.05	STOP/RST key function	0: This parameter is valid only for panel control 1: This parameter is valid for both panel and terminal control 2: Effective for both panel and communication control 3: Valid for all control modes	0~3	0	○
F17.06	Run display parameter 1	0x0000~0xFFFF Bit0: Running frequency (Hz steady on) Bit1: Set frequency (Hz blinking) Bit2: Bus voltage (V bright) Bit3: Output voltage (V bright) Bit4: Output current (A on) Bit5: Running speed (rpm bright) Bit6: Output power (% bright) Bit7: Output torque (% bright) Bit8: PID given value (% flicker) Bit9: PID feedback value (% steady on) Bit10: Input terminal status Bit11: output terminal status Bit12: Torque setting value (% bright) Bit13: pulse meter value Bit14: length value Bit15: PLC and the current number of multi-segment speeds	0x0000~0xFFFF	0x03FF	○
F17.07	Operation display parameter 2	0x0000~0xFFFF Bit0: analog quantity AI1 value (V bright) Bit1: analog quantity AI2 value (V bright)	0000~FFFF	0x0000	○

		Bit2: Reserved Bit3: High speed pulse HI frequency Bit4: Motor overload percentage (% bright) Bit5: Frequency converter overload percentage (% bright) Bit6: Slope frequency set value (Hz bright) Bit7: linear velocity Bit8: AC incoming line current (A on) Bit9: Upper frequency (Hz bright) Bit10 to Bit15: reserved			
F17.08	Stop display parameter	0x0000~0xFFFF Bit0: Set frequency (Hz bright) Bit1: Bus voltage (V bright) Bit2: Input terminal status Bit3: output terminal status Bit4: PID given value (% flicker) Bit5: PID feedback value (% steady on) Bit6: Torque setting value (% bright) Bit7: analog quantity AI1 value (V bright) Bit8: analog quantity AI2 value (V bright) Bit9: Reserved Bit10: High speed pulse HI frequency Bit11: PLC and the current number of multi-segment speeds Bit12: pulse meter value Bit13: length value Bit14: Upper frequency (Hz bright) Bit15: Reserved	0x0000~0xFFFF	0x00FF	○
F17.09	Frequency display factor	0.01 ~ 10.00 Display frequency = running frequency * F17.09	0.01~10.00	1.00	○
F17.10	Speed display factor	0.1 ~ 999.9% Mechanical speed =120* display operating frequency ×F17.10/ number of motor poles	0.1~999.9%	100.0%	○
F17.11	Linear velocity display coefficient	0.1 ~ 999.9% Linear speed = mechanical speed x F17.11	0.1~999.9%	1.0%	○
F17.12	Temperature 1	-20.0~120.0℃		0.0	●

F17.13	Temperature 2	-20.0~120.0℃		0.0	●
F17.14	Control board software version	1.0000~6.5535		0.0000	●
F17.15	Local cumulative running time	0~65535h		0	●
F17.16	The power consumption of frequency converter is high	0~65535°（*1000）		0	●
F17.17	Low power consumption of converter	0.0~999.9°		0.0	●
F17.18	Inverter model	0: Model G machine 1: P-type machine		0	●
F17.19	Converter rated power	0.4~3000.0kW		0.0	●
F17.20	Rated voltage of converter	50~1200V		0	●
F17.21	Rated current of converter	0.1~6000.0A		0.0	●
F17.22	Manufacturer bar Code 1	0x0000~0xFFFF		0	●
F17.23	Manufacturer BARCODE 2	0x0000~0xFFFF		0	●
F17.24	Manufacturer BARCODE 3	0x0000~0xFFFF		0	●
F17.25	Manufacturer BARCODE 4	0x0000~0xFFFF		0	●
F17.26	Manufacturer BARCODE 5	0x0000~0xFFFF		0	●
F17.27	Manufacturer BARCODE 6	0x0000~0xFFFF		0	●
F17.28	Temperature 3	-20.0~120.0℃		0.0	●
Group F18 Status View Function groups					
F18.00	Set frequency	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●
F18.01	Output frequency	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●

F18.02	Slope given frequency	0.00Hz~F00.07	0.00~F00.07	0.00Hz	●
F18.03	Output voltage	0~1200V	0~1200	0V	●
F18.04	Output current	0.0~5000.0A	0.0~5000.0	0.0A	●
F18.05	Motor speed	0~65535RPM	0~65535	0 RPM	●
F18.06	Torque current	-3000.0~3000.0A	-3000.0~3000.0	0.0A	●
F18.07	Field current	-3000.0~3000.0A	-3000.0~3000.0	0.0A	●
F18.08	Motor power	-300.0~300.0% (relative to rated power of motor)	-300.0~300.0	0.0%	●
F18.09	Motor output torque	-250.0~250.0%	-250.0~250.0	0.0%	●
F18.10	Estimated motor frequency	0.00~ F00.07	0.00~ F00.07	0.00Hz	●
F18.11	Dc bus voltage	0.0~6000.0V	0.0~6000.0	0.0V	●
F18.12	Switch input terminal status	0000~03F Corresponding to HI2, HI1, DI4, DI3, DI2, DI1	0000~03F	0	●
F18.13	Switch output terminal status	0000~000F T2, T1, HO, DO	0000~000F	0	●
F18.14	Digital adjustment	0.00Hz~ F00.07	0.00~ F00.07	0.00Hz	●
F18.15	Torque feed quantity	-300.0%~300.0% (rated current of motor)	-300.0~300.0	0.0%	●
F18.16	Linear velocity	0~65535	0~65535	0	●
F18.17	Internal contactor status	0 ~ 65535 0: contactor points 1: The contactor is closed Bit0: buffer contactor status Bit1: Fan contactor status	0~65535	0	●
F18.18	Count value	0~65535	0~65535	0	●
F18.19	AI1 Input voltage	0.00~10.00V	0.00~10.00	0.00V	●
F18.20	AI2 Input voltage	-10.00~10.00V	-10.00~10.00	0.00V	●
F18.21	HI1 Input frequency	0.00~50.000kHz	0.000~50.000	0.000 kHz	●
F18.22	HI2 Input frequency	0.00~50.000kHz	0.000~50.000	0.000 kHz	●

F18.23	PID set value	-100.0~100.0%	-100.0~100.0	0.0%	●
F18.24	PID feedback value	-100.0~100.0%	-100.0~100.0	0.0%	●
F18.25	Motor power factor	-1.00~1.00	-1.00~1.00	1.00	●
F18.26	This run time	0~65535m	0~65535	0m	●
F18.27	Simple PLC and multi - section speed current section number	0~15	0~15	0	●
F18.28	Motor ASR controller output	-300.0%~300.0% (rated current of motor)	-300.0~300.0	0.0%	●
F18.29	Pole Angle of open loop synchronous motor	0.0~360.0	0.0~360.0	0.0	●
F18.30	Synchronous motor phase compensation amount	-180.0~180.0	-180.0~180.0	0.0	●
F18.31	High frequency superposition current of synchronous motor	0.0%~200.0% (rated current of motor)	0.0~200.0	0.0	●
F18.32	Motor flux	0.0%~200.0%	0.0~200.0	0.0%	●
F18.33	The excitation current is given	-3000.0~3000.0A	-3000.0~3000.0	0.0A	●
F18.34	Torque current is set	-3000.0~3000.0A	-3000.0~3000.0	0.0A	●
F18.35	Ac incoming line current	0.0~5000.0A	0.0~5000.0	0.0A	●
F18.36	Output torque	-3000.0Nm~3000.0Nm	-3000.0~3000.0	0.0Nm	●
F18.37	Motor overload meter value	0~65535	0~65535	0	●
F18.38	Process PID output	-100.0%~100.0%	-100.0~100.0	0.0%	●

F18.39	Parameter download error function code	0.00~99.99	0.00~99.99	0.00	●
F18.40	Motor control mode	The ones bit: control mode 0: The vector 0 1: Vector 1 2: VF control 3: Closed loop vector Tens digit: control state 0: Speed control 1: Torque control Hundred digit: motor number 0: Motor 1 1: Motor 2	0x000~0x123	0x002	●
F18.41	Upper limit of electric torque	0.0%~300.0% (rated current of motor)	0.0~300.0	180.0%	●
F18.42	Upper limit of braking torque	0.0%~300.0% (rated current of motor)	0.0~300.0	180.0%	●
F18.43	Torque control positive upper frequency	0.00~F00.07	0.00~F00.07	50.00Hz	●
F18.44	Upper frequency of torque control reversal	0.00~F00.07	0.00~F00.07	50.00Hz	●
F18.45	Inertia compensates for torque	-100.0%~100.0%	-100.0~100.0	0.0%	●
F18.46	Friction compensation torque	-100.0%~100.0%	-100.0~100.0	0.0%	●
F18.47	Motor pole number	0~65535	0~65535	0	●
F18.48	Frequency converter overload meter value	0~65535	0~65535	0	●
F18.49	Master frequency setting	0.00~F00.07	0.00~F00.07	0.00Hz	●
F18.50	Cofrequency setting	0.00~F00.07	0.00~F00.07	0.00Hz	●

F18.51	PID proportional output	-100.0%~100.0%	-100.0~100.0	0.0%	●
F18.52	PID integral output	-100.0%~100.0%	-100.0~100.0	0.0%	●
F18.53	PID differential output	-100.0%~100.0%	-100.0~100.0	0.0%	●
F18.54	PID Current proportional gain	0.00~100.00	0.00~100.00	0.00	●
F18.55	PID Current integration time	0.00~10.00	0.00~10.00	0.00	●
F18.56	PID Current differential time	0.00~10.00	0.00~10.00	0.00	●
F18.57	Number of protection interrupts	0~65535	0~65535	0	●
F18.58	Median voltage	0.0~6553.5V	0.0~6553.5	0.0	●
F18.59	Medium negative voltage	0.0~6553.5V	0.0~6553.5	0.0	●
F18.60	FPGA software version	1.00~655.35	1.00~655.35	1.00	●
F18.61	RS line voltage	0~65535V	0~65535	0	●
F18.62	ST line voltage	0~65535V	0~65535	0	●
F18.63	TR line voltage	0~65535V	0~65535	0	●
Group F19 Closed-loop control status view function group					
F19.00	Encoder measured frequency	-999.9~3276.7Hz	-999.9~3276.7	0.0Hz	●
F19.01	Encoder position count	0~65535	0~65535	0	●
F19.02	Encoder Z pulse meter value	0~65535	0~65535	0	●
F19.03	Position The set value is high	0~30000	0~30000	0	●
F19.04	Position set low value	0~65535	0~65535	0	●
F19.05	The position	0~30000	0~30000	0	●

	feedback value is high				
F19.06	The position feedback value is low	0~65535	0~65535	0	●
F19.07	Position deviation	-32768~32767	-32768~32767	0	●
F19.08	Position Position of the reference point	0~65535	0~65535	0	●
F19.09	Set the current position of the spindle	0~359.99	0~359.99	0.00	●
F19.10	The main shaft must stop at the current position	0~65535	0~65535	0	●
F19.11	Encoder Z pulse direction	0~1	0~1	0	●
F19.12	Encoder Z pulse Angle	0~359.99	0~359.99	0.00	●
F19.13	Number of Z pulse errors in encoder	0~65535	0~65535	0	●
F19.14	Encoder pulse count high	0~65535	0~65535	0	●
F19.15	Encoder pulse counts low	0~65535	0~65535	0	●
F19.16	Reserved variable	-3276.8~3276.7	-3276.8~3276.7	0.0	●
F19.17	Pulse instruction frequency	-3276.8~3276.7Hz	-3276.8~3276.7	0.0Hz	●
F19.18	Pulse instruction feed forward	-3276.8~3276.7Hz	-3276.8~3276.7	0.0Hz	●
F19.19	Position regulator output	-327.68~327.67	-327.68~327.67	0.00	●
F19.20	Gyrometer value	0~65535	0~65535	0	●
F19.21	Rotation Angle	0~359.99	0~359.99	0.00	●

F19.22	Magnetic pole Angle of closed loop synchronous motor	0~359.99	0~359.99	0.00	●
F19.23	Status control word 3	0~65535	0~65535	0	●
F19.24	Pulse set count high	0~65535	0~65535	0	●
F19.25	Pulse set count low	0~65535	0~65535	0	●
F19.26	Spindle reduction ratio	-3276.8~3276.7	-3276.8~3276.7	0.0	●
F19.27	Encoder UVW sector	0~7	0~7	0	●
F19.28	Encoder wire count display	0~65535	0~65535	0	●
F19.29	Synchronous motor Angle compensation value	-180.0~180.0	-180.0~180.0	0.0	●
F19.30	Reserved variable	0.00~359.99	0.00~359.99	0.00	●
F19.31	Z pulse value of F route	0~65535	0~65535	0	●
F19.32	Reserved variable	-3276.8~3276.7	-3276.8~3276.7	0.0	●
F19.33	Reserved variable	-3276.8~3276.7	-3276.8~3276.7	0.0	●
F19.34	Reserved variable	0~63	0~63	0	●
F19.35	Reserved variable	0~65535	0~65535	0	●
Group F20 Expansion card status View function groups					
F20.00	Status of slot 1	0 ~ 65535 0: there is no card 1: Reserve 2: indicates the I/O card 3: Incremental PG card	0~65535	0	●

		4: Incremental PG card with UVW 5: Reserve 6: DP communication card 7: Bluetooth card 8: Spin PG card 9: CANOPEN communication card 10: Keep 11: Profinet communication card 12: PG card without CD signal 13: PG card with CD signal 14: absolute value encoder PG card 15:CAN master/slave communication card 16: MODBUS communication card 17: Reserve 18: BacNet communication card 19: Reserved			
F20.01	Status of slot 2	0 ~ 65535 0: there is no card 1: Reserve 2: indicates the I/O card 3: Incremental PG card 4: Incremental PG card with UVW 5: Reserve 6: DP communication card 7: Bluetooth card 8: Spin PG card 9: CANOPEN communication card 10: Keep 11: Profinet communication card 12: PG card without CD signal 13: PG card with CD signal 14: absolute value encoder PG card 15:CAN master/slave communication card 16: MODBUS communication card 17: Reserve 18: BacNet communication card 19: Reserved	0~65535	0	●
F20.02	Status of slot 3	0 ~ 65535 0: there is no card 1: Reserve 2: indicates the I/O card 3: Incremental PG card	0~65535	0	●

		4: Incremental PG card with UVW 5: Reserve 6: DP communication card 7: Bluetooth card 8: Spin PG card 9: CANOPEN communication card 10: Keep 11: Profinet communication card 12: PG card without CD signal 13: PG card with CD signal 14: absolute value encoder PG card 15:CAN master/slave communication card 16: MODBUS communication card 17: Reserve 18: BacNet communication card 19: Reserved			
F20.03	Card slot 1 Expands the software version of the card	0.00~655.35	0~655.35	0.00	●
F20.04	Card slot 2 Expands the software version of the card	0.00~655.35	0~655.35	0.00	●
F20.05	Card slot 3 Expands the software version of the card	0.00~655.35	0~655.35	0.00	●
F20.06	Extended I/O card terminal input status	0~0xFFFF	0~0xFFFF	0	●
F20.07	Extended I/O card terminal output status	0~0xFFFF	0~0xFFFF	0	●
F20.08	Extended I/O HI3 input frequency (Reserved)	0.000~65.535kHz	0.000~65.535	0.000kHz	●
F20.09	Expand the I/O card AI3 input voltage	0.00~10.00V	0.00~10.00	0.00V	●

F20.10	CAN Master/Slave Data 1 (frequency)	0.00~655.35Hz	0.00~655.35Hz	0.00Hz	●
F20.11	CAN Master/slave Data 2 (current)	-300.0~300.0%	-300.0~300.0%	0.0%	●
F20.12	CAN master/slave data 3	-300.0~300.0%	-300.0~300.0%	0.0%	●
F20.13	CAN Master/Slave Data 4 (Command)	0~65535	0~65535	0	●
F20.14	Number of online slave machines (Valid only for hosts)	0~65535	0~65535	0	●
F20.15	CAN receive count normally	0~65535	0~65535	0	●
F20.16	CAN send an error count	0~65535	0~65535	0	●
F20.17	CAN receive error counts	0~65535	0~65535	0	●
F20.18	CAN error status log	0~0xFFFF	0~0xFFFF	0	●
F20.19	CAN receive CRC check error count	0~0x65535	0~65535	0	●
Group F21 Position control group					
F21.00	Positioning mode selection	The ones bit: controls mode selection 0: Speed control 1: Position control Tens place: location instruction source 0: pulse train 1: indicates the number position 2: photoelectric switch stop positioning Hundred place: position feedback source (reserved, fixed as P channel) 0: PG1	0~0x7121	00	○

		1: indicates PG2 Thousand position: Servo mode (reserved) 0: The servo is not enabled and the position has no deviation 1: The servo is not enabled and the position is deviated 2: Servo enabled, position without deviation 3: Servo enabled, position deviation			
F21.01	Pulse command mode	The ones bit: pulse form 0: A/B orthogonal pulse A is ahead of B 1: A: PULSE B: SIGN Circuit B low level, edge plus count, circuit B high level, edge minus count. 2: A: positive PULSE A forward pulse; No cable is connected to route B 3: A\B double pulse; A pulse edge added counting, B pulse edge minus counting Tens place: pulse direction selection Bit0: pulse positive direction setting 0: positive 1: Reverse Bit1: Pulse direction is set by running direction 0: disables BIT0. In this case, BIT0 is valid. 1: enables the function Hundred place: pulse plus direction frequency doubling selection (reserved) 0: The frequency is not doubled 1: Double the frequency Thousand position: Pulse control selection Bit0: pulse filter selection 0: inertial filtering 1: moving average filtering Bit1: Overspeed suppression 0: does not suppress 1: Inhibition	0~0x3133	0x000	◎
F21.02	Position loop gain 1	0~400.0	0~400.0	20.0	○

F21.03	Position loop gain 2	0~400.0	0~400.0	30.0	○
F21.04	Position loop gain switching mode	0: No switching 1: torque instruction 2: speed instruction 3 to 5: Reserve	0~5	0	○
F21.05	Position gain switches torque instruction level	0.0 ~ 100.0% (rated torque of motor)	0~100.0	10.0%	○
F21.06	Position gain switches RPM instruction level	0.0 ~ 100.0% (rated motor speed)	0~100.0	10.0%	○
F21.07	Gain switching smoothing filter factor	0~15	0~15	5	○
F21.08	Position controller output limiting	0.0~100.0% (maximum output frequency F0.07)	0~100.0	20.0%	○
F21.09	Location Location completion range	0~1000	0~1000	10	○
F21.10	Location Time when the detection is complete	0.0~1000.0ms	0~1000.0	10.0ms	○
F21.11	Position instruction ratio molecule	1～65535	1～65535	1000	○
F21.12	Position instruction ratio denominator	1～65535	1～65535	1000	○
F21.13	Position feedforward gain	0.00 ~ 120.00% Pulse train given only (position control)	0~120.00	100.00	○
F21.14	Position feedforward filtering time constant	0.0 to 3200.0ms Pulse train given only (position control)	0~3200.0	3.0ms	○
F21.15	Position instruction filtering time constant	0.0～3200.0ms	0~3200.0	0.0ms	◎

F21.16	Digital positioning mode selection	Bit0: : Positioning mode selection 1: Absolute position (origin) (reserved) Bit1: Locate the loop selection 0: terminal cyclic positioning 1: automatic cyclic positioning Bit2: Loop mode 0: continuous 1: reciprocating (only automatic cyclic positioning is supported) Bit3: F21.17 Digital setting mode 0: incremental 1: positional (continuous mode not supported) Bit4: origin search mode 0: searches for the origin only once. 1: searches for the origin every time Bit5: Origin correction mode 0: real-time correction 1: single correction Bit6: Positioning completes signal selection 0: valid within the signal holding time of completion of positioning (F21.25) 1: Always valid Bit7: First positioning selection (for terminal cyclic positioning) 0: invalid (no rotation) 1: Effective Bit8: Positioning enable signal selection (for terminal cyclic positioning, automatic cyclic positioning is always enabled) 0: indicates the pulse signal 1: level signal Bit9: Location source 0: Set F21.17 1: profibus/canopen Settings Bit10~11: Reserved Bit12: Positioning curve selection (reserved) 0: straight line 1: S curve	0~0xFFFF	0	○
F21.17	Position number setting	0~65535	0~65535	0	○
F21.18	Positioning speed setting selection	0: F21.19 Digit setting 1: Set analog quantity AI1 2: Set analog quantity AI2	0~5	0	○

		3: Reserve 4: High speed pulse HI1 setting 5: High speed pulse HI2 setting			
F21.19	Positioning speed digital setting	0 ~ 100.0% maximum frequency	0~100.0	20.0%	○
F21.20	Positioning acceleration time	0.01～300.00s	0~300.00	3.00s	○
F21.21	Positioning deceleration time	0.01～300.00s	0~300.00	3.00s	○
F21.22	Positioning arrival hold time	0.000～60.000s	0~60.000	0.100s	○
F21.23	Origin search speed	0.00～50.00Hz	0~50.00	2.00Hz	○
F21.24	Origin position migration	0~65535	0~65535	0	○
F21.25	Positioning completion signal holding time	0.000～60.000s	0~60.000	0.200s	○
F21.26	Pulse stack value	0~65535	0~65535	0	○
F21.27	Pulse superposition rate	0~6553.5	0~6553.5	8.0	○
F21.28	Acceleration and deceleration time after pulse rejection	000.0～3000.0s	0~3000.0	5.0s	○
F21.29	Velocity feedforward filtering time constant (pulse train velocity mode)	0～3200.0ms	0~3200.0	10.0ms	○
F21.30	The second instruction is the ratio molecule	1～65535	1～65535	1000	○
Group F22 Spindle positioning set					
F22.00	Spindle positioning mode selection	Bit0: Enables spindle positioning 0: disabled 1: enabled Bit1: Selection of reference points for	0~0x0FFFF	0	○

		spindle positioning 0: Z-pulse input 1: S2/S3/S4 terminal input Bit2: Search for reference point selection 0: search only once 1: search every time Bit3: Enable reference point correction 0: disabled 1: enabled Bit4: Location mode selection 1 0: Set orientation. 1: Set orientation in the nearest direction Bit5: Location mode selection 2 0: forward positioning 1: reverse positioning Bit6: Return to zero command selection 0: level mode 1: pulse mode Bit7: Reference point correction mode 0: first correction 1: real-time correction Bit8: Return to zero signal (level type) after cancellation action selection 0: Switch to speed mode 1: Position lock mode Bit9: Position positioning completes signal selection 0: level signal 1: Pulse signal Bit10: Source of Z pulse signal 0: from the motor 1: from the main axis Bit11~15: Reserved			
F22.01	Spindle stopping speed	0.00~100.00Hz	0~100.00	10.00Hz	○
F22.02	Spindle stop speed reduction time	0.1~100.0s	0.1~100.0	3.0s	○
F22.03	Principal axis zero position 0	0~39999	0~39999	0	○
F22.04	Principal axis zero position 1	0~39999	0~39999	0	○
F22.05	Principal axis zero position 2	0~39999	0~39999	0	○
F22.06	Principal axis	0~39999	0~39999	0	○

	zero position 3				
F22.07	Spindle indexing Angle 1	0.00~359.99	0~359.99	15.00	○
F22.08	Spindle indexing Angle 2	0.00~359.99	0~359.99	30.00	○
F22.09	Spindle indexing Angle 3	0.00~359.99	0~359.99	45.00	○
F22.10	Spindle indexing Angle 4	0.00~359.99	0~359.99	60.00	○
F22.11	Spindle indexing Angle 5	0.00~359.99	0~359.99	90.00	○
F22.12	Spindle indexing Angle 6	0.00~359.99	0~359.99	120.00	○
F22.13	Spindle indexing Angle 7	0.00~359.99	0~359.99	180.00	○
F22.14	Spindle transmission ratio	0.001~30.000	0.001~30.000	1.000	○
F22.15	Spindle zero communication setting	0~39999	0~39999	0	○
F22.16	Reserved variable	0~65535	0~65535	0	○
F22.17	Reserved variable	0~65535	0~65535	0	○
F22.18	Rigid tapping selection	The ones bit: enables selection 0: disabled 1: enabled Tens place: analog port selection 0: invalid 1: AI1 2: AI2 3: AI3	0~0x31	0x00	◎
F22.19	Rigid tapping analog filter time	0.0ms~1000.0ms	0.0~1000.0	1.0ms	○
F22.20	Maximum frequency of rigid tapping	0.00~400.00Hz	0.00~400.00	50.00Hz	○
F22.21	Rigid tapping simulates the	0.00~10.00Hz	0.00~10.00	0.00Hz	○

	frequency corresponding to zero drift				
F22.22	Pulse setting speed measurement mode selection	0~2	0~2	0	○
F22.23	Pulse given feedforward selection	0x00~0x11 One bit: Determined by frequency source A Tens place: pulse train speed given	00~11	0	◎
F22.24	Encoder count clear set value	0~65535	0~65535	0	◎
Group F23 Extended I/O card input function group					
F23.00	DI5 Terminal function Select	Same as F10 group	0~79	0	◎
F23.01	DI6 terminal function Select		0~79	0	◎
F23.02	DI7 Terminal function Select		0~79	0	◎
F23.03	DI8 Terminal function Select		0~79	0	◎
F23.08	Expansion card input terminal polarity selection	0x00~0x7F	0x000~0x7F	0x00	◎
F23.09	DI5 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.10	DI5 terminal shutdown delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.11	DI6 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.12	DI6 terminal shutdown delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.13	DI7 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.14	DI7 terminal	0.000~50.000s	0.000~50.000	0.000s	○

	shutdown delay time				
F23.15	DI8 terminal closing delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.16	DI8 terminal shutdown delay time	0.000~50.000s	0.000~50.000	0.000s	○
F23.23	Expansion card virtual terminal Settings	0x000 to 0x7F (0: Disable, 1: enable) BIT0: DI5 virtual terminal BIT1: DI6 virtual terminal BIT2: DI7 virtual terminal BIT3: DI8 virtual terminal BIT4: DI9 virtual terminal BIT5: DI10 virtual terminal BIT6: HI3 virtual terminal	0x000~0x7F	0x00	○
F23.24	Lower limit of AI3	0.00V~F23.26	0.00V~F23.26	0.00V	○
F23.25	AI3 lower limit is set	-300.0%~300.0%	-300.0~300.0	0.0%	○
F23.26	AI3 upper limit	F23.24~10.00V	F23.24~10.00	10.00V	○
F23.27	The upper limit of AI3 is set accordingly	-300.0%~300.0%	-300.0~300.0	100.0%	○
F23.28	AI3 Input filtering time	0.000s~10.000s	0.000~10.000	0.030s	○
F23.40	AI3 Input signal type selection	The value ranges from 0 to 1 0: Voltage type 1: Current type	0~1	0	◎
Group F24 Extended I/O card output function group					
F24.02	DO2 Output selection		0~63	0	○
F24.04	Relay T3 output selection		0~63	0	○
F24.05	Relay T4 output selection		0~63	0	○
F24.12	Select the polarity of the output terminal of the expansion card	0x0000~0x1FFF T10, T9... T3, HO2, DO3, DO2	000~1FFF	0x000	○

F24.15	DO2 Switch on delay time	0.000~50.000s	0.000~50.000	0.000s	○
F24.16	DO2 Disconnect delay time	0.000~50.000s	0.000~50.000	0.000s	○
F24.19	Relay T3 is switched on delay time	0.000~50.000s	0.000~50.000	0.000s	○
F24.20	Relay T3 disconnect delay time	0.000~50.000s	0.000~50.000	0.000s	○
F24.21	Switch on delay time of relay T4	0.000~50.000s	0.000~50.000	0.000s	○
F24.22	Disconnect delay time of relay T4	0.000~50.000s	0.000~50.000	0.000s	○
Group F25 Master/slave control function group					
F25.00	Master/slave mode selection	0: indicates that the master/slave control is invalid 1: The local host is the host 2: The local machine is the slave machine	0~2	0	◎
F25.01	Master/slave communication data selection	0: CAN 1: Reserve	0~1	0	◎
F25.02	Master/slave control mode	Single bit: Select the running mode of the primary and secondary computers 0: indicates master/slave mode 0 (Both the main machine and slave machine adopt speed control, and rely on droop control for power balance) 1: indicates master/slave mode 1 The master and slave must be in the same type of vector control mode, the master is in speed control mode, and the slave will be forced to be in torque control mode. 2: indicates master/slave mode 2 The slave starts in speed mode (master-slave mode 0) and then switches to torque mode (master-slave mode 1) at a certain frequency point. Tens place: Select from the starting command source 0: starts with the host 1: Determined by F00.02	0~0x112	0x001	◎

		Hundred bit: Enable the slave fault send function 0: indicates that the slave machine is faulty 1: The slave machine is faulty Thousand bit: The host protection function is enabled when the secondary machine is disconnected 0: The secondary machine is disconnected from the host 1: The secondary host goes offline. The host does not report the fault			
F25.03	Slave speed gain	0.0~500.0%	0.0~500.0	100.0%	○
F25.04	Slave torque gain	0.0~500.0%	0.0~500.0	100.0%	○
F25.05	Master/slave mode 2, speed mode/torque mode switch frequency points	0.00~10.00Hz	0.00~10.00	5.00	○
F25.06	Number of slave machines	0~15	0~15	1	◎
F25.07	Host data sending cycle (host only)	0.000~5.000s	0.000~5.000	0.001s	◎
Group F26 Expansion card reserve function group					
F26.00	Reserved monitoring variable	0~1	0~1	0	◎
F26.01	Reserved monitoring variable	0~65535	0~65535	0	○
F26.02	Reserved monitoring variable	0~65535	0~65535	0	○
F26.03	Reserved monitoring variable	0~65535	0~65535	0	○
F26.04	Reserved monitoring variable	0~65535	0~65535	0	○
F26.05	Reserved monitoring	0~65535	0~65535	0	○

	variable				
F26.06	Reserved monitoring variable	0~65535	0~65535	0	○
F26.07	Reserved monitoring variable	0~65535	0~65535	0	○
F26.08	Reserved monitoring variable	0~65535	0~65535	0	○
F26.09	Reserved monitoring variable	-32768~32767	-32768~32767	0	○
F26.10	Reserved monitoring variable	-32768~32767	-32768~32767	0	○
F26.11	Reserved monitoring variable	0~1	0~1	0	●
F26.12	Reserved monitoring variable	0~65535	0~65535	0	●
F26.13	Reserved monitoring variable	0~65535	0~65535	0	●
F26.14	Reserved monitoring variable	0~65535	0~65535	0	●
F26.15	Reserved monitoring variable	0~65535	0~65535	0	●
F26.16	Reserved monitoring variable	0~65535	0~65535	0	●
F26.17	Reserved monitoring variable	0~65535	0~65535	0	●
F26.18	Reserved monitoring	0~65535	0~65535	0	●

	variable				
F26.19	Reserved monitoring variable	0~65535	0~65535	0	●
F26.20	Reserved monitoring variable	-32768~32767	-32768~32767	0	●
F26.21	Reserved monitoring variable	-32768~32767	-32768~32767	0	●
F26.22	Reserved monitoring variable	0~65535	0~65535	0	●
F26.23	Reserved monitoring variable	0~65535	0~65535	0	●
F26.24	Reserved monitoring variable	0~65535	0~65535	0	●
F26.25	Reserved monitoring variable	0~65535	0~65535	0	●
F26.26	Reserved monitoring variable	0~65535	0~65535	0	●
F26.27	Reserved monitoring variable	0~65535	0~65535	0	●
F26.28	Reserved monitoring variable	0~65535	0~65535	0	●
F26.29	Reserved monitoring variable	0~65535	0~65535	0	●
Group F27 Reserve function group					
F27.00	Midpoint voltage balance compensation maximum	0~120	0~120	102	◎

F27.01	Midpoint voltage balance mode	0 ~ 2 0: default 1: proportional mode 2: indicates the PI mode	0~2	0	◎
F27.02	Proportional coefficient of voltage balance at midpoint	0~5000	0~5000	400	◎
F27.03	Integral coefficient of voltage balance at midpoint	0~10	0~10	6	◎
F27.04	Neutral voltage level adjustment intensity (SPWM modulation)	0~5000	0~5000	400	◎
F27.05	Midpoint potential unbalance protection limit	0.0V~200.0V	0.0~200.0	80.0	◎
F27.06	Narrow pulse setting	0~375 /37.5us	0~375	375	◎
F27.07	Reserved variable	0~65535	0~65535	0	●
F27.08	Reserved variable	0~65535	0~65535	0	●
F27.09	Reserved variable	0~65535	0~65535	0	●
F27.10	Reserved variable	0~65535	0~65535	0	●
F27.11	Reserved variable	0~65535	0~65535	0	●
F27.12	Reserved variable	0~65535	0~65535	0	●
F27.13	Reserved variable	0~65535	0~65535	0	●
F27.14	Reserved variable	0~65535	0~65535	0	●
F27.15	Reserved	0~65535	0~65535	0	●

	variable				
F27.16	Reserved variable	0~65535	0~65535	0	●
F27.17	Reserved variable	0~65535	0~65535	0	●
F27.18	Reserved variable	0~65535	0~65535	0	●
F27.19	Reserved variable	0~65535	0~65535	0	●
F27.20	Reserved variable	0~65535	0~65535	0	●
F27.21	Reserved variable	0~65535	0~65535	0	●
F27.22	Reserved variable	0~65535	0~65535	0	●
F27.23	Reserved variable	0~65535	0~65535	0	●
F27.24	Reserved variable	0~65535	0~65535	0	●
F27.25	Reserved variable	0~65535	0~65535	0	●
F27.26	Reserved variable	0~65535	0~65535	0	●
F27.27	Reserved variable	0~65535	0~65535	0	●
F27.28	Reserved variable	0~65535	0~65535	0	●
F27.29	Reserved variable	0~65535	0~65535	0	●
F27.30	Reserved variable	0~65535	0~65535	0	●
F27.31	Reserved variable	0~65535	0~65535	0	●
F27.32	Reserved variable	0~65535	0~65535	0	●
F27.33	Reserved variable	0~65535	0~65535	0	●

F27.34	Reserved variable	0~65535	0~65535	0	●
F27.35	Reserved variable	0~65535	0~65535	0	●
F27.36	Reserved variable	0~65535	0~65535	0	●
F27.37	Reserved variable	0~65535	0~65535	0	●
F27.38	Reserved variable	0~65535	0~65535	0	●
F27.39	Reserved variable	0~65535	0~65535	0	●
Group F28 Second motor parameter group					
F28.00	Motor type selection	0: asynchronous motor 1: synchronous motor	0~1	0	◎
F28.01	Rated power of induction motor	0.1~3000.0kW	0.1~3000.0	Model determination	◎
F28.02	Rated voltage of induction motor	0~1200V	0~1200	Model determination	◎
F28.03	Rated current of induction motor	0.8~6000.0A	0.8~6000.0	Model determination	◎
F28.04	Rated frequency of induction motor	0.01Hz to Max frequency (F00.07)	0.01~F00.07	50.00Hz	◎
F28.05	Rated speed of induction motor	1~60000rpm	1~60000	Model determination	◎
F28.06	Stator resistance of induction motor	0.001~65.535Ω	0.001~65.535	Model determination	○
F28.07	Rotor resistance of induction motor	0.001~65.535Ω	0.001~65.535	Model determination	○
F28.08	Induction motor leakage	0.1~6553.5mH	0.1~6553.5	Model determination	○
F28.09	Induction motor mutual induction	0.1~6553.5mH	0.1~6553.5	Model determination	○
F28.10	No-load current of induction motor	0.1~6553.5A	0.1~6553.5	Model determination	○
F28.11	Magnetic	0.0~100.0%	0.0~100.0	80.0%	○

	saturation coefficient of induction motor core 1				
F28.12	Magnetic saturation coefficient of induction motor core 2	0.0~100.0%	0.0~100.0	68.0%	○
F28.13	Induction motor core magnetic saturation factor 3	0.0~100.0%	0.0~100.0	57.0%	○
F28.14	Magnetic saturation coefficient of induction motor core 4	0.0~100.0%	0.0~100.0	40.0%	○
F28.15	Rated power of synchronous motor	0.1~3000.0kW	0.1~3000.0	Model Determination	◎
F28.16	Rated voltage of synchronous motor	0~1200V	0~1200	Model Determination	◎
F28.17	Rated current of synchronous motor	0.8~6000.0A	0.8~6000.0	Model Determination	◎
F28.18	Rated frequency of synchronous motor	0.01Hz to Max frequency (F00.07)	0.01~F00.07	50.00Hz	◎
F28.19	Number of synchronous motor poles	1~128	1~128	2	◎
F28.20	Stator resistance of synchronous motor	0.001~65.535Ω	0.001~65.535	Model Determination	○
F28.21	Straight shaft inductance of synchronous motor	0.01~655.35mH	0.01~655.35	Model Determination	○

F28.22	Inductance of alternating shaft of synchronous motor	0.01~655.35mH	0.01~655.35	Model Determination	○
F28.23	Back electromotive force constant of synchronous motor	0~10000V	0~10000	300	○
F28.24	Initial pole position of synchronous motor (reserved)	0~0xFFFF	0~0xFFFF	0x0000	●
F28.25	Synchronous motor identification current (reserved)	0%~50% (rated current of motor)	0~50	10%	●
F28.26	Motor parameter display selection	0: Display according to the type of motor 1: displays all	0~1	0	○
F28.27	Inertia of the motor system	0～30.000kgm2	0~30.000	0.000	○
Group F29 Second motor encoder group					
F29.00	Encoder type display	0: incremental encoder 1: rotary encoder 2: Sin/Cos encoder 3: Endat absolute value encoder	0~65535	0	●
F29.01	Encoder pulse number	0~60000	0~60000	1024	◎
F29.02	Encoder direction	The ones digit is in the AB direction 0: forward 1: reverse Tens place: Z-pulse direction (reserved) 0: forward 1: reverse Hundred position: CD/UVW pole signal direction 0: forward 1: reverse	0~0x111	0x000	◎
F29.03	Encoder disconnection fault detection time	0.0~10.0s	0.0~10.0	2.0s	○

F29.04	Encoder reverse fault detection time	0.0~100.0s	0.0~100.0	0.8s	○
F29.05	Encoder detects the number of filters	The ones bit: number of low-speed filters Ten bit: number of high-speed filters	0~0x99	0x33	○
F29.06	Motor to encoder mounting shaft speed ratio	0~65.535	0~65.535	1.000	○
F29.07	Synchronous motor control parameters	Bit0: Z-pulse correction enabled Bit1: Enable encoder Angle correction Bit2: SVC speed measurement is enabled Bit3: Selection of rotational velocity measurement mode Bit4: Z pulse capture mode Bit5: v/f control does not detect the encoder initial Angle Bit6: CD Signal correction enabled Bit7: sin/cos subdivision speed measurement prohibited Bit8: Self-learning does not detect encoder faults Bit9: Z-pulse detection optimization enabled Bit10: Enable first z pulse correction optimization Bit12: Stop clear Z pulse arrival signal	0x0000~0xFFFF	0x0003	○
F29.08	Z-pulse broken line detection is enabled	0x00~0x11 The ones bit: Z pulse 0: no detection 1: enables the function Ten: UVW pulse (for synchronous motor) 0: no detection 1: enables the function	00~11	0x10	○
F29.09	Initial Z pulse Angle	0~359.99	0~359.99	0.00	○
F29.10	Initial Angle of magnetic pole	0~359.99	0~359.99	0.00	○
F29.11	Initial pole position learning	0 ~ 3 0: no operation is performed	0~3	0	◎

		1: rotation self-learning 2: Static self-learning 3: Select Self-learning 2			
F29.12	Velocity measurement optimization selection	0: not optimized 1: Optimization mode 1 2: Optimization mode 2	0~2	1	◎
F29.13	CD signal zero bias gain	0~65535	0~65535	0	○
F29.14	Encoder type selection	Bits: incremental encoder 0: does not contain UVW 1: with UVW Tens place: Sin/Cos encoder 0: The CD signal is not displayed 1: indicates the CD signal	0x00~0x11	0x00	◎
F29.15	Speed measurement mode selection	0: PG card 1: The machine, through HI1,HI2, only support incremental 24V encoder	0~1	0	◎
F29.16	Frequency division coefficient	0~255	0~255	0	○
F29.17	Pulse filter processing selection	0x0000~0xffff Bit0: indicates that the encoder P input filter is enabled 0: does not filter 1: filtering Bit1: encoder signal filtering mode 0: indicates adaptive filtering 1: Use F29.18 filtering parameter Bit2: encoder P channel frequency division output filtering is enabled 0: does not filter 1: filtering Bit3: Frequency division output filtering is enabled for the pulse set F path 0: does not filter 1: filtering Bit4: Pulse set F path filtering is enabled 0: does not filter 1: filtering Bit5: Pulse set F path filtering mode	0~ffff	0x0033	○

		0: indicates adaptive filtering 1: Filter parameter F29.19 is used Bit6: Frequency division output source selection 0: P channel 1: F Road Bit7~15: Reserved			
F29.18	Encoder P filter width	0 ~ 63 0 indicates 0.25us	0~63	2	○
F29.19	Pulse set F filter width	0 ~ 63 0 indicates 0.25us	0~63	2	○
F29.20	Pulse Set F pulse number	0~65535	0~65535	1024	◎
F29.21	Synchronous motor Angle compensation is enabled	0~1	0~1	0	○
F29.22	Speed measurement mode switch frequency point	0~630.00Hz	0~630.00	1.00Hz	○
F29.23	Angle compensation coefficient	-200.0~200.0%	-200.0~200.0	100.0%	○
F29.24	Synchronous motor 2 pole initial Angle self-learning pole number	0~128	0~128	2	◎
Group F30 second motor vector control group					
F30.00	Velocity loop proportional gain 1	0~200.0	0~200.0	20.0	○
F30.01	The velocity loop integrates at time 1	0.000~10.000s	0.000~10.000	0.200s	○
F30.02	Switching frequency 1	0.00Hz~F30.05	0.00~F30.05	5.00Hz	○
F30.03	Velocity loop	0~200.0	0~200.0	20.0	○

	proportional gain 2				
F30.04	The velocity loop integrates at time 2	0.000~10.000s	0.000~10.000	0.200s	○
F30.05	Switching frequency 2	F30.02~ Max frequency (F00.07)	F30.02~F00.07	10.00Hz	○
F30.06	Vector control slip gain (electric)	50%~200%	50~200	100%	○
F30.07	Vector control slip gain	50%~200%	50~200	100%	○
F30.08	Speed loop output filtering time	0~8 (corresponding to 0~2^8/10ms)	0~8	0	○
F30.09	Current loop proportional gain	0~65535	0~65535	1000	○
F30.10	Current loop integral gain	0~65535	0~65535	1000	○
F30.11	Differential gain of velocity loop	0.00~10.00s	0.00~10.00	0.00s	○
F30.12	High frequency current loop scaling coefficient	0~65535	0~65535	1000	○
F30.13	Integral coefficient of high frequency current loop	0~65535	0~65535	1000	○
F30.14	Current loop high frequency switching point	0.0~100.0%（F00.07）	0~100.0%	100.0%	○
Group F31 Second motor V/F control parameter group					
F31.00	V/F curve setting	0: Line V/F 1: multipoint V/F 2:1. Third power reduction of torque V/F 3:1.7 power reduction of torque V/F 4:2. Power reduction of torque V/F 5: V/F separation	0~5	0	◎
F31.01	Torque lift	0.0%~10.0% (rated voltage of motor 1)	0.0~10.0	0.0%	○

F31.02	Torque lift cut-off	0.0%~50.0% (relative to rated frequency of motor 1)	0.0~50.0	20.0%	◎
F31.03	V over F frequency point 1	0.00Hz~F31.05	0.00~F31.05	0.00Hz	○
F31.04	V/F voltage point 1	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F31.05	V over F frequency point 2	F31.03~ F31.07	F31.03~ F31.07	0.00Hz	○
F31.06	V over F voltage point 2	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	0.0%	○
F31.07	V over F frequency point 3	F31.05~ F31.09	F31.05~ F31.09	0.00Hz	○
F31.08	V/F voltage at point 3	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F31.09	V over F frequency point 4	F31.07~ F28.04 (asynchronous motor 2 rated frequency) Or F31.05~ F28.18 (synchronous motor 2 rated frequency)	F31.05~ Motor 2 rated frequency	0.00Hz	○
F31.10	V over F voltage point 4	0.0%~110.0% (rated voltage of motor 1)	0.0~110.0	00.0%	○
F31.11	V/F oscillation suppression gain 1	0~100	0~100	10	○
F31.12	V/F oscillation suppression gain 2	0~100	0~100	10	○
F31.13	V/F cut-off point for suppressing oscillations	0.00Hz to Maximum frequency (F00.07)	0.00Hz~F00.07	30.00 Hz	○
F31.14	V/F slip compensation gain	0.0~200.0%	0.0~200.0	0.0%	○
F31.15	Asynchronous motor 2 Current source mode Enable select	0~1	0~1	0	◎
F31.16	Asynchronous motor 2 current source mode	0.0~200.0% (rated current of motor)	0.0~200.0%	120.0%	○

	current setting				
F31.17	Induction motor 2 current source mode ratio coefficient	0~5000	0~5000	350	○
F31.18	Induction motor 2 current source mode integral coefficient	0~5000	0~5000	150	○
F31.19	Cut out the frequency point of the asynchronous motor 2 current source mode	0.00~F31.20	0.00~F31.20	10.00Hz	○
F31.20	Asynchronous motor 2 current source mode voltage recovery frequency point	F31.19~ Max Frequency (F00.07)	F31.19~F00.07	25.00	○
Group F90 AIAO correction function group					
F90.00	Calibrate the parameter group password	00000	0~65535	0	○
F90.01	AI1 Voltage input AD sampling value	0~4095	0~4095	0	●
F90.02	AI1 Given voltage 1	-0.50~4.00V	-0.50~4.00	0.00V	○
F90.03	AI1 AD sampling value corresponding to the given voltage 1	0~5000	0~5000	0	○
F90.04	AI1 Given voltage 2	6.00~10.50V	6.00~10.50	10.00V	○
F90.05	AI1 AD sampling value corresponding to the given voltage	0~5000	0~5000	4050	○

	2				
F90.06	AI1 Current input AD sampling value	0~4095	0~4095	0	●
F90.07	AI1 Given current 1	-1.00~8.00mA	-1.00~8.00	0.00mA	○
F90.08	AI1 AD sampling value corresponding to the given current 1	0~4095	0~4095	0	○
F90.09	AI1 Given current 2	12.00~21.00mA	12.00~21.00	20.00mA	○
F90.10	AI1 AD sampling value corresponding to the given current 2	0~4095	0~4095	3903	○
F90.11	Sample value of AI2 voltage input	0~4095	0~4095	0	●
F90.12	AI2 Given voltage 1	-0.50~4.00V	-0.50~4.00	0.00V	○
F90.13	AI2 AD sampling value corresponding to the given voltage 1	0~5000	0~5000	0	○
F90.14	AI2 Given voltage 2	6.00~10.50V	6.00~10.50	10.00V	○
F90.15	AI2 AD sampling value corresponding to the given voltage 2	0~5000	0~5000	4050	○
F90.16	AI3 Voltage input AD sampling value	0~4095	0~4095	0	●
F90.17	AI3 Given voltage 1	-0.50~4.00V	-0.50~4.00	0.00V	○

F90.18	AI3 AD sampling value corresponding to the given voltage 1	0~4095	0~4095	0	○
F90.19	AI3 Given voltage 2	6.00~10.50V	6.00~10.50	10.00V	○
F90.20	AI3 AD sampling value corresponding to the given voltage 2	0~4095	0~4095	3884	○
F90.21	AI3 Current input AD sampling value	0~4095	0~4095	0	●
F90.22	AI3 Given current 1	-1.00~8.00mA	-1.00~8.00	0.00mA	○
F90.23	AI3 AD sampling value corresponding to the given current 1	0~4095	0~4095	0	○
F90.24	AI3 Given current 2	12.00~21.00mA	12.00~21.00	20.00mA	○
F90.25	AI3 AD sampling value corresponding to the given current 2	0~4095	0~4095	3958	○
F90.26	The 0V target output AO1 corresponds to the actual voltage value	-1.000~12.500V	-1.000~12.500	0.000V	○
F90.27	The 10V target output AO1 corresponds to the actual voltage value	-1.000~12.500V	-1.000~12.500	10.480V	○
F90.28	The 0mA target	-2.000~25.000mA	-2.000~25.000	-0.400mA	○

	output AO1 corresponds to the actual current value				
F90.29	The 20mA target output AO1 corresponds to the actual current value	-2.000~25.000mA	-2.000~25.000	20.500mA	○
F90.30	The 0V target output AO2 corresponds to the actual voltage value	-1.000~12.500V	-1.000~12.500	0.000V	○
F90.31	The 10V target output AO2 corresponds to the actual voltage value	-1.000~12.500V	-1.000~12.500	10.480V	○
F90.32	The 0mA target output AO2 corresponds to the actual current value	-2.000~25.000mA	-2.000~25.000	-0.400mA	○
F90.33	The 20mA target output AO2 corresponds to the actual current value	-2.000~25.000mA	-2.000~25.000	20.500mA	○
F90.34	Reserved variable	0~65535	0~65535	0	●
F90.35	Reserved variable	0~65535	0~65535	0	●
F90.36	Reserved variable	0~65535	0~65535	0	●
F90.37	Reserved variable	0~65535	0~65535	0	●
F90.38	Reserved variable	0~65535	0~65535	0	●
F90.39	Reserved variable	0~65535	0~65535	0	●
F90.40	Reserved variable	0~65535	0~65535	0	●
F90.41	Reserved variable	0~65535	0~65535	0	●
F90.42	Reserved variable	0~65535	0~65535	0	●
F90.43	Reserved variable	0~65535	0~65535	0	●

Chapter 7 Troubleshooting and Abnormal Handling

This chapter describes how to reset the fault and view the fault history. This chapter also lists all alarms and fault information, as well as possible causes and corrective actions.

Danger
Only trained and qualified professionals may perform the work described in this chapter.

7.1 FD3000-based Control Architecture

7.1.1 Alarm and Fault Indication

Faults are indicated by indicators. See "5.4 Keypad Operation". When the ERR indicator is lit, the alarm or fault code displayed on the keypad indicates that the inverter is in an abnormal state. Using the information given in this chapter, you can find out the cause of most alarms or faults and their corrective actions. If you cannot find out the cause of the alarm or fault, contact the agent from whom you purchased the inverter or contact us directly.

7.1.2 Fault Reset

To restore normal operation when a fault occurs in the inverter, you can select any of the following operations :

(1) When the fault code is displayed, press the STOP/RES key after confirming that it can be reset.

(2) Set any of the X1 ~ X10 terminals to external RESET input, and then close the COM terminal and disconnect it.

(3) Turn off the power.

Warning
(1) The cause of the fault must be thoroughly investigated and eliminated before resetting , otherwise it may lead to permanent damage of the inverter.
(2) If the fault cannot be reset or reoccurs after reset, the cause should be checked, continuous reset will damage the inverter.
(3) Overload and overheat protection action should be delayed for 5 minutes to reset.

7.1.3 Fault History

Function codes F13.11 to F13.42 record the six most recent fault types. Function codes F13.17 ~ F13.24, F13.25 ~ F13.32, F13.33 ~ F13.40 record the operation data of the inverter at the time of the last three failures.

7.1.4 Fault Phenomenon and Countermeasures

Once a fault occurs in the inverter, the protection function acts, the inverter stops output, the inverter fault relay contacts act, and the fault code is displayed on the inverter display panel.

Before seeking service, the user can first conduct a self-examination according to the tips in this section, analyze the cause of the fault and find out the solution. If the problem still cannot be solved, please seek service by contacting the agent of the inverter you purchased or contacting our company directly.

Table 7-1 Fault alarm content and countermeasures

Fault code	Type of fault	Possible cause	Corrective measures
Err-01	Inverter unit U-phase protection	• Too fast acceleration. • Internal damage to the phase IGBT. • False operation caused by interference. • Poor drive line connection. • Short circuit to ground.	• Increase acceleration time. • Replace the power unit. • Please check the drive line. • Check peripheral devices for strong interference sources.
Err-02	Inverter unit V-phase protection		
Err-03	Inverter unit W-phase protection		
Err-04	Acceleration overcurrent	• Acceleration and deceleration are too fast. • Grid voltage is low. • Frequency converter power is low. • Sudden change or abnormal load. • Short circuit to ground, output is out of phase. • Strong external interference source exists. • Over loss of speed protection is not turned on.	• Increase acceleration and deceleration time. • Check the input power. • Select an inverter with a higher power level. • Check the load for short circuit (short circuit to ground or short circuit between lines) or blocked rotation. • Check the output wiring. • Check whether there is strong interference. • Check the setting of relevant function code.
Err-05	Deceleration overcurrent		
Err-06	Constant velocity overcurrent		
Err-07	Acceleration overvoltage	• Deceleration time is too short. • Abnormal input voltage. • Large energy feedbacks exist. • Missing brake assembly. • Energy brake function not turned on.	• Check the input power supply. • Check that the load deceleration time is not too short, or that there is a motor that starts in rotation. • Need to add energy brake component. Check the setting of relevant function codes.
Err-08	Deceleration overvoltage		
Err-09	Constant speed overvoltage		
Err-10	Busbar undervoltage fault	• Grid voltage is low. • Overvoltage stall protection is not on.	• Check the grid input power. • Check the setting of relevant function codes.

Err-11	Motor overload	• Grid voltage is too low. • Motor rated current is not set correctly. • Motor blocking or sudden load change is too large.	• Check the grid voltage. • Reset the motor current rating. • Check the load and adjust the amount of torque boost.
Err-12	Inverter overload	• Accelerate too fast. • Perform a restart on a rotating motor. • Grid voltage too low. • Excessive load. • Small horse-drawn car.	• Increase acceleration time. • Avoid stopping and restarting. • Check the grid voltage. • Choose a higher power inverter. • Select the right motor.
Err-13	Input side phase loss	• Input R, S, T are out of phase or fluctuate greatly	• Check input power. • Check the installation cable
Err-14	Output side out of phase	• U, V, W Out-of-phase output (or load with severe three-phase asymmetry).	• Check the output wiring. • Check the motor and cables.
Err-15	Rectifier module overheating	• Clogged air duct or damaged fan. • High ambient temperature. • Long time overload operation.	• Unclog the air ducts or replace the fan. • Lower the ambient temperature.
Err-16	Inverter module overheating fault		
Err-17	External fault	• SI External fault input terminal operated.	• Check the external device input.
Err-18	485 communication fault	• Improper baud rate setting. • Communication line failure. • Communication address is wrong. • Communication is subject to strong interference.	• Set the appropriate baud rate. • Check the communication interface wiring. • Set the correct communication address. • Replace or change the wiring to improve immunity.

Err-19	Current detection fault	• Poor contact at control board connector. • Damaged Hall device. • Abnormal amplifier circuit.	• Check the connector and rewire it. • Replace the Hall. • Replace the main control board.
Err-20	Motor self-learning fault	• The motor capacity does not match the inverter capacity, and the difference is more than 5 power levels. • Improper setting of motor parameters. • Self-learning parameters deviate too much from the standard parameters. • Self-learning timeout.	• Change the inverter model, or use VF mode control. • Set the motor type and nameplate parameters correctly. • Make the motor no-load and re-define it. • Check motor wiring and parameter settings. • Check if the upper frequency is greater than 2/3 of the rated frequency.
Err-21	EEFROM operation fault	• An error occurred reading or writing the control parameters. EEFROM is damaged.	• Press the right shift key to reset. • Replace the main control board.
Err-22	PID feedback disconnection fault	• PID feedback is disconnected. • PID feedback source disappears.	• Check the PID feedback signal line. • Check PID feedback source.
Err-23	Brake unit fault	• Brake line failure or brake tube damage. • The resistance value of the external braking resistor is small.	• Check the brake unit and replace the brake pipe with a new one. • Increase the braking resistance.
Err-24	Runtime reached	• The actual running time of the inverter is greater than the internal set running time.	• Seeking suppliers to adjust the set running time.
Err-25	Electronic overload fault	• The inverter performs an overload warning according to the set value.	• Detects load and overload warning points.

Err-26	Keyboard communication error	• The keyboard cable has poor contact or broken wire. • Keyboard line is too long, subject to strong interference. • Keyboard or motherboard communication part of the circuit failure.	• Check the keyboard cable to confirm whether the fault exists. • Check the environment and eliminate the source of interference. • Replace hardware and demand repair service.
Err-27	Parameter upload error	• The keyboard cable has poor contact or broken wire. • Keyboard line is too long, subject to strong interference. • Keyboard or motherboard communication part of the circuit failure.	• Check the environment and eliminate sources of interference. • Replace hardware and demand repair service. • Replace hardware, demand repair service.
Err-28	Parameter download error	• The keyboard cable has poor contact or broken wire. • The keyboard cable is too long and subject to strong interference. • Wrong data stored in the keyboard.	• Check the environment and eliminate sources of interference. • Replace hardware and demand repair service. • Back up the data in the keyboard again.

Err-32	Short-circuit to ground fault 1	• Inverter output is shorted to ground. • The current detection circuit is faulty. • The difference between the actual motor power setting and the inverter power is too large.	• Check motor wiring for proper operation. • Replace the Hall. • Replace the main control board. • Reset the correct motor parameters.
Err-33	Short circuit to ground fault 2	• Inverter output is shorted to ground. • The current detection circuit is faulty. • The difference between the actual motor power setting and the inverter power is too large.	• Check motor wiring for proper operation. • Replace the Hall. • Replace the main control board. • Reset the correct motor parameters.

Err-34	Speed deviation fault	• The load is too heavy or is blocked in rotation.	• Check the load, make sure the load is normal, and increase the detection time. • Check that the control parameters are appropriate.
Err-35	Out of tune fault	• Improper setting of synchronous motor control parameters. • Self-learning parameters are not allowed. • The inverter is not connected to the motor.	• Check the load and make sure the load is normal. • Check that the control parameters are set correctly. • Increase the out-of-tune detection time.
Err-59	Motor over-temperature fault	• Motor overtemperature input terminal is valid. • Temperature detection resistor is abnormal. • The motor has been overloaded for a long time or there is an abnormality.	• Check motor overtemperature input terminal (terminal function 57) Wiring. • Check that the temperature sensor is normal. • Check the motor and maintain it.

Err-55	Expansion card type duplication fault	Two expansion cards of the same type are inserted.	• It does not support inserting two cards of the same type at the same time, please check the expansion card type and unplug one after power down.
Err-60	Card slot 1 expansion card recognition failure	There is data transfer on the Card Slot 1 interface, but the card type is not recognized.	• Verify that the expansion card inserted in the slot is supported. • After powering down, secure the expansion card interface and power it back up to confirm that the fault still occurs. • Detect if the card port is damaged, if it is, replace the card port after power down.
Err-61	Card slot 2 expansion card recognition failure	There is data transmission on the Card Slot 2 interface, but the card type is not recognized.	• Verify that the expansion card inserted in the slot is supported. • Secure the expansion card port after power down and

			reapply power to confirm if the fault still occurs. • Check if the card port is damaged, if it is, replace the card port after power down.
Err-63	Card slot 1 expansion card communication timeout failure	There is no data transmission on the Card Slot 1 interface.	• Verify that the expansion card inserted in the slot is supported. • Secure the expansion card port after power down and reapply power to confirm if the fault still occurs. • Detect if the card port is damaged, if it is, replace the card port after power down.
Err-64	Card slot 2 expansion card communication timeout failure	There is no data transmission on the Card Slot 2 interface.	• Verify that the expansion card inserted in the slot is supported. • After power down, stabilize the expansion card interface and reapply power to confirm that the failure has not occurred. • Detect whether the card port is damaged, if it is damaged, you can change a card port after power down.

7.2 FG2100-based Control Architecture

7.2.1 Fault Phenomenon and Countermeasures

Once a fault occurs in the inverter, the protection function will be activated, the inverter will stop output, the inverter fault relay contact will be activated, and the fault code will be displayed on the inverter display panel.

Before seeking service, the user can first conduct a self-examination according to the tips in this section, analyze the cause of the fault and find out the solution. If the problem still cannot be solved, please seek service by contacting the agent of the inverter you purchased or contacting our company directly.

Table 7-2 Fault alarm content and countermeasures

Fault code	Fault type	Possible causes of fault	Fault countermeasure
E-02	Acceleration overcurrent	1、The inverter output circuit has ground or short circuit 2、The control mode is vector and no parameter identification 3、Acceleration time is too short 4、Manual torque boost or V/F curve is not suitable 5、Low voltage 6、Starting the motor which is rotating 7、Suddenly adding load during acceleration 8、Inverter selection is small	1、Exclude peripheral faults 2、Identify motor parameters 3、Increase the acceleration time 4、Adjust the manual boost torque or V/F curve 5、Adjust the voltage to normal range 6、Select speed tracking start or wait for the motor to stop before starting 7、Cancel the sudden addition of load 8、Choose the inverter with higher power level
E-03	Deceleration overcurrent	1、The inverter output circuit has ground or short circuit 2、The control mode is vector and no parameter identification 3、Deceleration time is too short 4、The voltage is low 5、Suddenly add load during deceleration 6、No brake unit and brake resistor installed	1、Exclude peripheral faults 2、Identify motor parameters 3、Increase the deceleration time 4、Adjust the voltage to the normal range 5、Cancel the sudden addition of load 6、Add braking unit and resistor
E-04	Constant speed overcurrent	1、The inverter output circuit has ground or short circuit 2、The control mode is vector and no parameter identification 3、Low voltage 4、Whether there is a sudden addition of load in operation 5、Inverter selection is small	1、Exclude peripheral faults 2、Identify the motor parameters 3、Tune the voltage to normal range 4、Cancel the sudden addition of load 5、Choose a larger power level inverter
E-05	Acceleration over-voltage	1、Input voltage is high 2、The existence of external forces dragging the motor during the acceleration process 3、Acceleration time is too short 4、No brake unit and brake resistor installed	1、Adjust the voltage to the normal range 2、Cancel this power or add brake resistor 3、Increase the acceleration time 4、Add braking unit and resistor

E-06	Decelerating over-voltage	1、Input voltage is high 2、During the deceleration process, there is an external force dragging the motor to run 3、Deceleration time is too short 4、No brake unit and brake resistor installed	1、Check the input power 2、Extend the acceleration and deceleration time appropriately 3、Install input reactor 4、Use energy braking components
E-07	Constant over-voltage	1、Input voltage is high 2、The existence of external forces dragging the motor during operation	1、Check the input power or seek service 2、Cancel this power or add brake resistor

E-08	Buffer resistor overheating fault	1、Input power is not normal	1、Check the input power
E-09	Undervoltage fault	1、Transient power failure 2、The voltage at the input of the inverter is not in the range required by the specification 3、Bus voltage is not normal 4、The rectifier bridge and buffer resistor are not normal 5、Driver board abnormal 6、The control board is abnormal	1、Reset the fault 2、Adjust the voltage to the normal range 3、Seek technical support
E-10	Inverter overload	1、Whether the load is too large or motor blocking occurs 2、Inverter selection is small	1、Reduce the load and check the motor and mechanical condition 2、Use the inverter with greater power level
E-11	Motor overload	1、Is the setting of motor protection parameter P7-01 appropriate? 2、Whether the load is too large or the motor is blocked 3、Inverter selection is small	1、Check and troubleshoot the problems in the peripheral circuit 2、Seek technical support
E-12	Input out of phase	1、Three-phase input power is not normal 2、Driver board abnormal 3、The lightning protection board is abnormal 4、The main control board is abnormal	1、Check and troubleshoot the problems in the peripheral circuit 2、Seek technical support

E-13	Output phase loss	1、The lead from the inverter to the motor is not normal 2、The three-phase output of the inverter is unbalanced when the motor is running 3、Driver board abnormal 4、The module is abnormal	1、Exclude peripheral faults 2、Check whether the motor three-phase winding is normal and troubleshoot 3、Seek technical support
E-14	Module overheating	1、The ambient temperature is too high 2、Blocked air duct 3、Damaged fan 4、The module thermistor is damaged 5、Inverter module is damaged	1、Lower the ambient temperature 2、Clean the air duct 3、Replace the fan 4、Replace the thermistor 5、Replace the inverter module
E-15	External device fault	1、Signal of external fault input through multi-function terminal DI 2、Signal of external fault input through virtual IO function	Reset operation

E-16	Communication fault	1、The upper computer is not working properly 2、Communication line is not normal 3、Communication expansion board P0-28 is not set correctly 4、Communication parameter PD group is not set correctly	1、Check the upper computer wiring 2、Check the communication connection line 3、Set the communication expansion board type correctly 4、Set the communication parameters correctly
E-18	Current detection fault	1、Check Hall device abnormality 2、Driver board abnormality	1、Replacement of Hall devices 2、Replacement of driver board
E-19	Motor tuning fault	1、Motor parameters are not set according to the nameplate 2、Parameter identification process timeout	1、Set the motor parameters correctly according to the nameplate 2、Check the inverter to motor lead
E-20	Code plate fault	1、The encoder model does not match 2、The encoder connection error 3、The encoder is damaged 4、The epansion board is abnormal	1、According to the actual correct setting encoder type 2、Exclude line fault 3、Replace the encoder 4、Replace the expansion board

E-21	EEPROM read/write failure	Damaged EEPROM chip	Replace the main control board
E-23	Short circuit to ground fault	Motor short circuit to ground	Replace cables and motors
E-26	Cumulative runtime reached fault	Accumulated running time reaches set value	Clear logged information using the parameter initialization function
E-27	User-defined fault 1	1、Input the signal of user-defined fault 1 through multi-function terminal DI 2、Input the signal of user-defined fault 1 through the virtual IO function	Reset operation
E-28	User-defined fault 2	1、Input the signal of user-defined fault 2 through multi-function terminal DI 2、Input the signal of user-defined fault 2 through the virtual IO function	Reset operation
E-29	Cumulative power-up time reached fault	Cumulative power-up time reaches the set value	Use the parameter initialization function to clear the logged information
E-30	Load drop fault	Inverter operating current is less than P7-64	Verify that the load is disengaged or that the P7-64 and P7-65 parameters are set to match the actual operating conditions.
E-31	Run-time PID feedback loss fault	PID feedback is less than P8-26 set value	Check the PID feedback signal or set PC-26 to a suitable value
E-40	Fast current limit fault	1、Whether the load is too large or motor blocking occurs 2、Inverter selection is small	1、Reduce the load and check the motor and mechanical condition 2、Use the inverter with greater power level
E-41	Switching motor fault during operation	Change the current motor selection via the terminal during inverter operation	Inverter shutdown and then motor switching operation

E-42	Excessive speed deviation fault	1、The encoder parameters are not set correctly 2、No parameter identification 3、The speed deviation is too large detection parameters P7-69 and P7-70 are not set correctly	1、Correctly set the encoder parameters 2、Identify the motor parameters 3、Reasonable setting of detection parameters according to the actual situation

7.2.2 Common Faults and Handling Methods

The following fault conditions may be encountered during the use of the inverter, please refer to the following methods for simple fault analysis.

Table 7-3 Common faults and their handling methods

No.	Fault phenomenon	Possible cause	solution
1	No display at power on	1、The grid voltage is not available or too low 2、Inverter drive board on the switching power supply failure 3、The rectifier bridge is damaged 4、Inverter buffer resistor is damaged 5、Control board, keyboard failure Control board and drive board, keyboard between the connection line broken.	1、Check the input power 2、Check the bus voltage 3、Re-plug the 8-core and 34-core cable 4、Seek factory service
2	Power-on display FG	1、Poor contact between the driver board and the control board 2、The relevant devices on the control board are damaged 3、Motor or motor line has a short circuit to ground 4、Hall failure 5、The grid voltage is too low	1、Reinsert the 8 and 34 core wires 2、Seek factory service
3	Power-on display "E-23" alarm	1、Motor or output line short circuit to ground 2、Inverter damage	1、Measure the insulation of the motor and output line with a shaking table 2、Seeking manufacturer's service.
4	The power-on inverter shows normal, and after running, it shows " FG" and stop immediately after operation	1、Damaged or blocked fan 2、Peripheral control terminal wiring has a short circuit	1、Replace the fan 2、Excluding external short-circuit faults.

5	Frequent report E-14 (module overheating) fault	1、Load frequency setting is too high 2、Damaged fan or blocked air duct 3、The internal device of inverter is damaged (thermocouple or other)	1、Lower the load frequency (P0-15) 2、Replace the fan, clean the air duct 3、Seek factory service
6	The motor does not rotate after the inverter is running	1、Motor and motor line 2、Inverter parameters set wrong (motor parameters) 3、Poor contact between the drive board and the control board connection line 4、Driver board failure	1、Reconfirm the connection between the inverter and the motor 2、Replace the motor or clear the mechanical fault 3、Check and reset the motor parameters
7	DI terminal failure	1、Error in parameter setting 2、External signal error 3、Loose jumper between OP and +24V 4、Failure of the control board.	1、Check and reset P5 group related parameters 2、Reconnect the external signal line 3、Reconfirm OP and +24V jumper 4、Seek factory service
8	The motor speed cannot be increased when the closed-loop vector system is in operation.	1、Encoder failure 2、The encoder is connected to the wrong line or poor contact 3、Expansion board failure 4、Driver board failure	1、Replace the code board and reconfirm the wiring 2、Replace the expansion board 3、Seek service
9	Frequent overcurrent and overvoltage faults reported by the inverter	1、The motor parameters are not set correctly 2、Inadequate acceleration and deceleration time 3、Load fluctuation	1、Reset motor parameters or motor tuning 2、Set the appropriate acceleration and deceleration time 3、Seek factory service

7.2.3 Fault Reset

To restore normal operation when the inverter is faulty, you can select any of the following operations :

(1) When the fault code is displayed, press the STOP/RES key after confirming that it can be reset.

(2) Set any of the X1 ~ X10 terminals to external RESET input, and then close the COM terminal and disconnect it.

(3) Turn off the power.

Warning
(1) The cause of the fault must be thoroughly investigated and eliminated before resetting, otherwise it may lead to permanent damage of the inverter.
(2) If the fault cannot be reset or reoccurs after reset, the cause should be checked, continuous reset will damage the inverter.
(3) Overload and overheat protection action should be delayed for 5 minutes to reset.

Chapter 8 Maintenance

Danger
1. Do not touch the terminals of the inverter, there is high voltage on the terminals. There is a risk of electric shock.
2. Be sure to install the terminal cover before energizing, and disconnect the power when removing the cover. There is a risk of electric shock.
3. Do not perform maintenance or inspection work by non-technical personnel. There is a risk of electric shock and damage to the internal components.

Warning
1. CMOS integrated circuits are installed on the keyboard board, control board and driver board, so please pay special attention when using them. Touch the board directly with your fingers, electrostatic induction may damage the integrated chip on the board.
2. Do not change the wiring or remove the terminal wiring while the power is on. Do not check the signal during operation. It may damage the device.

Changes in the environment in which the inverter is used, such as the influence of temperature, humidity and smoke , as well as the aging of the internal components of the inverter, may lead to various failures of the inverter. Therefore, the inverter must be inspected daily during storage and use, and regular maintenance must be carried out.

8.1 Daily Maintenance

When the inverter is turned on normally, please check the following items:

- If the motor has abnormal sound and vibration.
- If the inverter and motor are abnormally hot.
- If the ambient temperature is too high.
- If the load current meter is the same as usual value.
- If the cooling system of the inverter is operating normally.
- Daily cleaning.

Remove the dust on the surface of the inverter effectively to prevent the dust from entering the inside of the inverter, especially metal dust.

8.2 Periodic Maintenance

According to the usage and working condition, the inverter should be inspected regularly every 3~6 months.

During the regular maintenance check of the inverter, the power must be cut off, and the check can be carried out only after the monitor has no display and the main circuit power indicator goes off. The inspection contents are shown in Table 8-1.

Table 8-1 Periodic inspection content

Project	Inspection items	Inspection content	Abnormal countermeasures
Inverter	Main circuit terminals	Whether the screws are loose	Tighten with a screwdriver
	Control circuit terminals	Whether the screw is loose	Tighten with a screwdriver
	Internal connection lines and connectors are secure	Whether there is loose	Connect it firmly
	PCB printed circuit board	Whether there is dust	Blow off with dry compressed air at a pressure of 4 to 6kgcm2.
	Power components	Whether there is dust	Blow off with dry compressed air at a pressure of 4~6kgcm2.
	Internal foreign matter	Whether there is internal foreign matter	Remove foreign matter
Motor	Insulation test	Megohmmeter	Check the insulation

Note: When measuring the insulation resistance with a megohmmeter, disconnect the main circuit from the inverter. Do not use an insulation resistance meter to test the control circuit insulation.

8.3 Regular Maintenance

In order to make the inverter work normally for a long time, it must be maintained and serviced regularly for the service life of the electronic components inside the inverter. The service life of the electronic components of the inverter varies depending on its operating environment and conditions. The maintenance period of the inverter as shown in Table 9-2 is for the user's reference only.

Table 8-2 Frequency converter parts replacement time

Device Name	Standard replacement year
Cooling fan	2 ~ 3 years
Capacitor	4 ~ 5 years
Printed Circuit Board	5 ~ 8 years

The conditions of use for the above inverter parts replacement time are :

(1) Ambient temperature : 30℃ on average per year.

(2) Load factor: less than 80%.

(3) Operating time: 12 hours or less per day.

Note: If the inverter has been idle for a long time, the inverter must be energized before use so that the characteristics of the main circuit in the inverter can be restored. The characteristics of the electrolytic capacitor in the main circuit of the inverter can be restored. When powering up the inverter, use the regulator to slowly increase the rated value. The storage time is calculated from the delivery date.

Table 8-3

Time	Operating Principle
Storage time less than 1 year	Operation without charging
Storage time 1-2 years	Before the first operation, the inverter must be energized for 2 hours, and the inverter must be charged with a voltage regulator: ● Add 25% of the rated voltage for 10 minutes ● Then add 50% rated voltage for 20 minutes ● Then add 75% of the rated voltage for 30 minutes and finally add 100% of the rated voltage for 1 hour.
Storage time 2-3 years	Charging the inverter with the regulator : ● Add 25% of the rated voltage for 1 hour ● Then add 50% of the rated voltage for 1 hour ● Add 75% of the rated voltage for 1 hour Finally, add 100% of the rated voltage for 1 hour

Storage time more than 3 years	Charging the inverter with the regulator : ● Add 25% of the rated voltage for 2 hours ● Then add 50% of the rated voltage for 2 hours ● Add 75% of the rated voltage for 2 hours Finally, add 100% of the rated voltage for 2 hours

股票简称：新风光
股票代码：688663

新风光电子科技股份有限公司
WindSun Science & Technology co.,Ltd.

地址：山东省汶上经济开发区
电话：0537-7216247
传真：0537-7212091
回访投诉：+86 18005313199（微信）
邮箱：info@fengguang.com
网址：www.fengguang.com
邮编：272500
服务热线：400-600-3199